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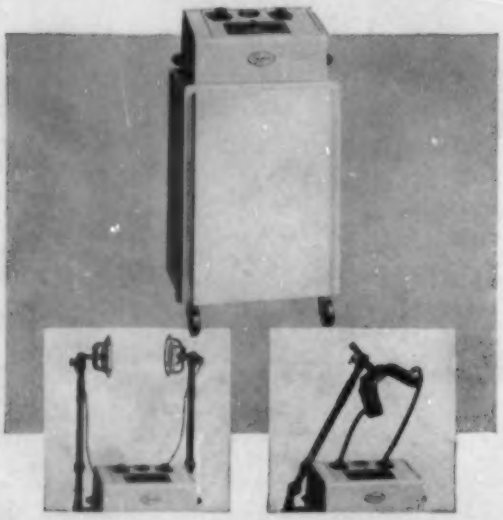

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Functional Training*

Edith Buchwald, M.A.

Functional training involves the physical reconditioning of the patient through a carefully devised exercise and activity program in order to make him able to handle his body in the most efficient way, so that he will be as independent as possible.

The basis for this independence lies in the performance of the activities necessary during the course of an ordinary day. We call these activities: ACTIVITIES OF DAILY LIVING (A.D.L.) which can be divided in three main groups:

"I. Self-care activities.
II. Locomotion and traveling activities.
III. Hand activities."[1]

The way to learn these activities is long and strenuous and the only possibility of reaching this goal is through exercise. Exercise is used not as an end in itself but as a means to become independent. Therefore, the exercise program is based on the motions inherent in the essential A.D.L.

How are A.D.L. taught? In general we approach the problem in the following way:

1. A given A.D.L. is broken down into its simplest motions.
2. Exercises are selected to enable the patient to perform these specific motions:
   (a) The motion itself may be practiced as an exercise: e.g., grasping a fork—the exercise for this motion may be grasping a fork or similar objects. If this is not possible for some reason, such as lack of strength or lack of coordination,
   (b) preparatory exercises, e.g., strengthening hand and finger muscles have to be practiced first, or
   (c) special gadgets may have to be devised.
3. The A.D.L. itself is practiced as a whole in a real life situation.

The discussion of the specific activity "eating a meal while sitting in bed" will make the above approach clearer and Chart I may serve as an example.

The first column shows the breakdown of the activity into its simplest motions. The second column shows examples of exercises to be practiced so the motions can be accomplished. The third column shows examples of preparatory exercises, if the patient for some reason or other is not ready for the exercise itself.

The above analysis of the motions is in the natural sequence of the A.D.L. itself. The sequence to be practiced with the patient will depend entirely on what he is able to do. It will be best to let him start with the parts of the A.D.L. he can do, and then gradually teach him the parts

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*This article is adapted from a chapter of a forthcoming book, "Teaching Activities of Daily Living," by Edith Buchwald, in collaboration with Howard A. Rusk, M.D., George G. Deaver, M.D., Donald A Covalt, M.D.

he cannot do. For example, he may be able to put the food into his mouth only when it is put on a spoon for him, or he may be able to maintain his balance in sitting before he has learned to come to a sitting position by himself.

Since the goal is to teach him a given A.D.L., the starting point should be selected according to his condition, and in such a way that he will feel that although the task is difficult it is not altogether impossible.

In this way we see a close interrelation between A.D.L. and exercise. We could say that the A.D.L. may be regarded as exercises and the exercises as part of A.D.L.

In a functional training program we use the term "exercises" as long as motions as such are practiced, e.g., sitting up, grasping eating utensils, etc. Once the patient combines motions in a real life situation, e.g., sits up and actually eats a meal, then we use the term "A.D.L." We must keep in mind that this differentiation is artificial and serves only for the purpose of simplification.

It cannot be stressed often enough that there are no rigid rules. The principle is to test the patient for what he can do, observe him carefully and then work out with him the methods that will be the easiest (best) for him, and also show him what other patients in similar conditions have found helpful.

There are also no rigid rules in regard to different disabilities when teaching A.D.L. We can only enumerate in general (a) the motions which in all probability a patient with a certain disability may have to learn and (b) the specific problems connected with his disability, always depending of course on the degree of involvement.

Based on Chart I we will consider now how to teach "eating a meal while sitting in bed" from the point of different disabilities. Chart II may serve as an outline to show in general what motions may have to be learned and what problems are to be considered.

If we classify patients as follows: (1) bed patients, (2) wheel chair patients and (3) ambulatory patients, we find that A.D.L. will involve different problems for the different levels. The motions necessary for "eating a meal while sitting

Chart I—Example of How to Select Exercises Which Are Based on the Basic Motions of a Given A.D.L.

Basic Motions and Exercises to be Considered when Teaching
"Eating a Meal while Sitting in Bed"

Simplest Motions of A.D.L.	*Exercises (teaching the motions)*	*Preparatory Exercises (if indicated)*
1. Changing from supine to sitting position	Sitting up, e.g., (a) using hands and elbows, (b) with help, (c) with gadgets, etc.	Rolling over, strengthening of arms, etc.
2. Maintaining balance while sitting, with and without arm movements.	Exercises for: Sitting-balance, e.g., with back supported, unsupported, etc.	Strengthening of shoulder girdle, back muscles, abdominals, etc.
3. Grasping and holding eating utensils.	Grasping and holding spoon, fork, knife. Wooden spools or rubber handles may be used at first to make grasping easier.	Strengthening of finger and hand muscles. Eye-hand coordination. (All hand exercises in connection with occupational therapy)
4. Using eating utensils, such as getting food on utensils, cutting, etc.	Going through real motions: (a) using regular food, or (b) plasticine may be used for learning how to cut.	Same as above.
5. Putting food into mouth.	Movements practiced: (a) without food (b) with food	Same as above.
6. Chewing and swallowing.	Specific exercises in connection with speech therapy.	

Chart II—Outline of Motions and Problems to be Considered when Teaching "Eating a Meal while Sitting in Bed."

ACCORDING TO DISABILITY
(Number of motions based on Chart I)

I. *Paraplegic:* Involvement of both lower extremities with or without abdominals (e.g., polio, spinal cord lesions, etc.)
Motions 1 and 2 have to be learned.

II. *Hemiplegic:* Involvement of upper and lower extremity on the same side, with or without aphasia. (e.g., cerebral hemorrhage, cerebral palsy, etc.)
(a) Probably motions 1-6 have to be learned,
(b) Performance of two-handed activities with one hand.
(c) Problem of aphasia has to be considered.

III. *Quadriplegic:* Involvement of all four extremities with or without abdominals or back muscles. (polio, spinal cord lesions, etc.)
(a) Probably motions 1-5 have to be learned.
(b) Special problem: hand and finger activities, special gadgets.

IV. *Amputees:* Loss of one or more extremities.
(a) Motions 1 and 2 for double amputation above the knee. Motions 3-5 for single or double amputations of the hand or entire arm.
(b) Special problem: management of artificial limb(s); if stump(s) too short for prostheses, special gadgets may have to be considered.

V. *Miscellaneous Disabilities* resulting from arthritis, polio, cerebral palsy, multiple sclerosis, Parkinson's, etc., with one or more special problems such as deformity, extreme incoordination, loss of sensation, loss of strength, severe spasticity, severe tremor, and rigidity.
(a) Probably motions 1-5 will have to be learned.
(b) Special problems: gadgets, hand-eye coordination, relaxation, etc.

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in bed" were shown on Chart I. If we consider a wheel chair patient we find the following:
"Eating a meal sitting in a wheel chair at a table" will involve:

(1) Getting dressed (which again includes getting washed, etc., first).
(2) Getting out of bed into wheel chair.
(3) Propelling the wheel chair to the table (with maintenance of balance in the wheel chair).
(4) Necessary motions for eating.

For an *ambulatory* patient the problem again is different:
"Eating a meal sitting at a table (using crutches, canes, etc.)" will involve:

(1) Walking (which again involves getting dressed, getting out of bed).
(2) Sitting down in chair at table
(a) at home.
(b) in cafeteria or restaurant (which involves traveling to get there).

Based on the above examples, we can say that a given A.D.L. for a given group of patients (bed, wheel chair, or ambulatory) is the sum total not only of all the motions of the specific activity but also of everything that was learned on the preceding level.

The approach we have used in teaching one activity can be applied to all activities and we will proceed now to the discussion of the total functional training program. Chart III gives the main groups of the A.D.L. and all the subdivisions of these groups to be considered.

Chart III—Activities of Daily Living:
General Classification.

I. *Self-care:*
1. Dressing activities.
2. Toilet activities
(1) Personal appearance: as care of hair, make-up or shaving, etc.
(2) Personal hygiene: as washing, bathing, care of teeth, etc.
(3) Problems of elimination: bowel and bladder training, attending toilet-needs, etc.
3. Eating activities

II. *Locomotion and Traveling:*
1. Getting from place to place—using wheel chair.
(1) Indoors
(2) Outdoors (assistance will be needed for curbs, steps, etc.)
(3) Using a transportation medium (car).
2. Walking — with or without appliances (crutches, prostheses, etc.)
(1) Indoors
(2) Outdoors (including crossing street)
3. Using a transportation medium (car, bus, etc.)
4. Elevation:
(1) From sitting to standing position (getting in and out of bed, chair, etc.)
(2) Climbing: (curbs, stairs, etc.)

III. *Hand activities:*
1. Communication, e.g., signal light, pressing bell button, writing, using telephone, etc.
2. In severe hand involvements necessary for self-care activities, e.g., management of buttons, zippers, etc.
3. Handling of furniture and gadgets, e.g., drawers, faucets, keys, etc.

Note: *Speech Therapy*
For speech disturbances.

If we now analyze all A.D.L. (Chart III) analogous to the same principle as we used in analyzing "eating a meal while sitting in bed," we find groups of motions which are basic to all A.D.L.

and these motions again become exercises which are shown in Chart IV below.

Before looking at Chart IV, we would like to repeat at this point that the division into A.D.L. and exercises is rather artificial and solely for classification purposes. We speak of "A.D.L." when the patient performs motions in a real life situation such as taking a bath, or attending to toilet needs, whereas when he only practices motions as such, e.g., getting in and out of the bathtub, or in and out of the wheel chair to the toilet seat, etc., we speak of "exercises."

Chart IV—Outline of Exercises for Teaching A.D.L.

A. *Exercises Without Appliances*—basis for A.D.L. in bed and wheel chair

I. *Moving about supine* in bed, or on mat.

II. *Coming to a sitting position* in bed, or on mat.

III. *Sitting balance:* exercises for maintaining balance with or without arm and/or trunk movements. In bed, wheel chair, on mat.

IV. *Push-ups* in bed, in wheel chair, on mat.

V. *Moving about while sitting* in bed, on mat.

VI. *Moving from place to place using wheel chair*
(1) managing wheel chair
(2) getting from wheel chair to bed, chairs, toilet, tub, etc., and back.

VII. *Moving on hands and knees* on mat.

VIII. *Special Exercises* as e.g.:
Hand and finger exercises, breathing exercises, etc.

B. *Locomotion and Traveling Exercises*—basis for A.D.L. involving walking
(a) with appliances
(b) without appliances

I. *Preparation for Walking*
1. *Management of braces* (putting on, taking off, care of, locking, unlocking) in bed, in wheel chair, on mat.
2. *Precrutch Exercises*
on mat: with small crutches
in parallel bars: (1) balancing, (2) walking, (3) push-ups (4) with crutches or canes
3. *Crutch Balancing Exercises*
(1) against wall, (2) away from wall, (3) rhythm exercises.

II. *Crutch Walking Exercises*
(1) gaits, (2) in different directions and through doors, (3) over obstacles, (4) on different floors, (5) walking for endurance, (6) walking for speed, (7) outdoors on smooth and rough surface.

III. *Elevation Exercises*
1. From sitting to standing position and reverse: (1) getting up and down from wheel chair (in parallel bars, against wall, away from wall, at table); (2) getting up and down from different pieces of furniture; (3) getting in and out of car, up and down from floor, etc.
2. Climbing exercises: graduated and standard ramps, curbs, steps, bus steps.

Summary: To simplify the very complex problem we divide the entire functional activity program as follows:

I. A.D.L. in bed and the necessary bed exercises.

II. A.D.L. in the wheel chair and the necessary wheel chair and mat exercises.

III. Locomotion and traveling activities and the necessary locomotion and traveling exercises.

We use the term exercises when motions as such are practiced, e.g., climbing stairs on the practice staircase in the gym, whereas we use the term A.D.L. when a combination of motions is performed in a real life situation, e.g., climbing the stairs to the entrance door when coming to the clinic. The classification as we said before is artificial and for purposes of clarification.

Each group of exercises is selected to teach the daily activities belonging to the respective group and unless the patient is able to perform the exercises (motions) in a given group he will not be ready to perform the A.D.L. in this group. Therefore in all instances, irrespective of what the condition of the patient and irrespective of what he reports, he should be tested for all activities. And under no circumstance should he be taught A.D.L. or exercises of a particular group before he has mastered the preparatory activities.

For example: (a) a patient should not be permitted to stand up in his braces until he has already learned how to maintain his balance in the sitting position, or

(b) he should not be taught how to walk with crutches unless he has been taught all crutch balancing exercises.

For further simplification we classify the patients as follows: (1) bed patients, (2) wheel chair patients, and (3) ambulatory patients.

A.D.L. are important on every level. It is of course desirable to regard each level as the preparatory stage for the following level, but it is also desirable to make every patient as independent as possible at his particular stage. For example, wheel chair patients should be able to travel in a car in order to get to their job, so that they can work even though walking cannot be taught for some reason or other.

Outlines for a functional training program for bed, wheel chair, and ambulatory patients are

Chart V—Outline of Functional Training Program for Bed Patients

Activities of Daily Living in Bed	*Exercises in Bed*
I. *Self-care* 1. Eating activities 2. Dressing activities 3. Toilet activities (1) Personal appearance such as care of hair, make-up or shaving, etc. (2) Personal hygiene: as washing, care of teeth, etc. (3) Problems of elimination: attending to toilet needs, use of bedpan, urinal, etc. Bowel and bladder training.	1. Moving about supine. 2. Coming to a sitting position. 3. Sitting balance. 4. Push-ups. 5. Moving about while sitting. 6. Sitting with legs over edge of bed.
II. *Hand Activities* 1. Communication: signal light, pressing bell-button, using telephone, writing, etc. 2. In severe hand involvements necessary as part of self-care: as management of buttons, zippers, etc.	Special hand exercises possibly in connection with occupational therapy. Strengthening, eye-hand coordination, etc. Special gadgets may have to be devised.

Note: The numbers in the two columns have no relationship to each other.

Chart VI—Outline of Functional Training Program for Wheel Chair Patients

Activities of Daily Living	*Exercises*
I. *Self-Care* involves getting from bed into wheel chair, propelling wheel chair to the place where the activity has to be performed; opening drawers and closets, doors, turning on light, etc. 1. Eating activities at table (home or cafeteria) 2. Dressing activities (partly in bed, partly in wheel chair as practicable) 3. Toilet activities (probably mostly in bathroom but also in bed, as practicable) (1) Personal appearance: care of hair, nails, etc. (2) Personal hygiene: washing, bathing, taking shower, care of teeth, etc. (3) Problems of elimination: attending to toilet needs: using toilet or commode. Bowel and bladder training.	*Wheel chair exercises* 1. From bed into wheel chair and back. 2. Push-ups 3. Sitting balance 4. Management of wheel chair 5. Exercises for getting from wheel chair on to chairs, toilet seat, into car, through doors, etc. *Mat exercises* 1. Getting from wheel chair to mat and back. 2. Moving from place to place supine. 3. Coming to a sitting position. 4. Moving from place to place sitting. 5. Sitting balance. 6. Push-ups. 7. Moving on hands and knees. (All above wheel chair and mat exercises are basic to all A.D.L. in Sections I and II of the left column.)
II. *Traveling Activities* Getting from place to place 1. Indoors (from one room to next) 2. Outdoors (smooth and rough surface). Help will be needed for curbs, stairs, etc. 3. Using a transportation medium: car (driving with hand control if possible)	Special hand exercises possibly in connection with occupational therapy.
III. *Hand Activities* Involves getting to place where activity has to be performed. 1 and 2 same as for bed patients, see Chart V. 3. Handling of furniture and gadgets: faucets, drawers, keys, etc. 4. Possibly as preparation for work.	Same as for bed patients.

shown on Charts V, VI, and VII. Only the most basic exercises are included and it is hoped that this basis may serve as a guide in building up a rich and flexible program.

If we consider an activity program according to disabilities we have to adapt the basic program to the particular problems of the specific disabilities (see Chart II).

Chart VII—Outline of Functional Training Program for Ambulatory Patients

Activities of Daily Living	*Exercises*
a) with appliances: braces, crutches, canes, etc. b) without appliances I. *Self-Care* involves getting in and out of bed on crutches, walking to place where activity is performed, opening drawers, walking through doors, getting up and down from chairs, turning lights on and off, etc. 1. *Eating activities at table* (home or cafeteria) 2. *Dressing activities* includes putting on and taking care of appliances (partly in bed and partly in wheel chair, partly standing; as practicable) 3. *Toilet activities* in bathroom or room (partly in wheel chair, partly on crutches as practicable) (1) Personal appearance: same activities as for wheel chair patients (2) Personal hygiene: same activities as for wheel chair patients. (3) Problems of elimination: same activities as for wheel chair patients. II. *Locomotion and Traveling Activities* 1. Walking indoors (from one room to next) 2. Walking outdoors (including crossing street) 3. Using transportation medium (car, bus, etc.) 4. Climbing: ramps, stairs, etc. III. *Hand Activities* involves walking to place where activity is performed, otherwise same as for wheel chair patients, see Chart VI.	*Mat exercises* same as for wheel chair patients plus: exercises with small crutches and management of braces. *Locomotion exercises* 1. *Precrutch exercises:* a) in parallel bars (1) balancing (2) walking (3) push-ups 2. *Crutch balancing* a) against the wall b) away from the wall 3. *Crutch walking* a) gaits b) different directions c) through doors d) over obstacles e) for endurance and for speed f) outdoors on: (1) smooth surface (2) rough surface 4. *Elevation exercises* a) from sitting to standing and reverse: in and out of bed, chairs, car, etc. b) climbing exercises; ramps, curbs, steps, etc. Specific hand exercises same as for wheel chair patients.

(All above mat exercises and locomotion exercises, basic to all A.D.L. in Sections I and II of the left column.)

It should not be forgotten that the primary goal is the teaching of Activities of Daily Living and the exercises serve only as a means to this end. Finally it is important to remember that A.D.L. are always more than the sum of their motions and have to be practiced as a whole in a real life situation, so that they may truly become the foundation for a maximum of independence of the patient.

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Administration of a Community Rehabilitation Center

Hazel E. Furscott

Dr. Howard A. Rusk said to us in his impressive talk at the banquet of the American Physical Therapy Association Convention in Boston, "We have a new concept, a concept that people have a right to work with what they have left, if they have something left with which they can be trained to work." To this concept is the rehabilitation center of today dedicated. Administration is a matter of coordination and guidance. The administration of a rehabilitation center with its various services to a wide variety of disabled and handicapped persons must unite the efforts of the constituent departments so that the complex day by day care of each individual patient results in a harmonious flow of services from all members of the rehabilitation team to the end that the day will arrive when the patient can meet the physical, mental, emotional, and vocational demands to his greatest capacity. Calling on other community resources to meet those needs not furnished under the roof of the center compels the administration to mobilize those community services and fit them into the organizational pattern.

I have prepared charts of the community relationships and the administration of The Rehabilitation Center of San Francisco, Inc., and have selected a typical case which will be used to illustrate how the various elements contribute and combine to round out the over-all program of rehabilitation.

Let us follow the story of Bill, a polio who lives in one of the rural counties in Northern California and who has been sent down to the Rehabilitation Center of San Francisco for rehabilitation services. Let us follow the course of his treatment and see how administration of a center directly influences the future of this boy.

Administrator of the Rehabilitation Center of San Francisco, Inc., 1680 Mission Street, San Francisco, California.

Bill is seventeen, a polio paraplegic, and he comes from a rural community 200 miles from San Francisco and at least 100 miles from the nearest physical therapist. He was hospitalized at the time of his onset in a San Francisco hospital and sent home when it was apparent that the "poors" and "traces" of both of his lower limbs would no longer benefit from muscle training. At home, he was wheel chair bound.

His local physician referred him to the Rehabilitation Center of San Francisco. The Coordinator of Services at the Center, a registered medical social worker, arranged for the Eldorado County Chapter of the National Foundation for Infantile Paralysis to finance Bill's trip, housing, and fee at the Center. Bill was chosen as the "Youth Project for the Year" by the Eastern Star of Eldorado which donated the money to the Chapter to carry out these plans.

Although the Center looks forward to the time when it will have dormitory facilities, now it must hunt for housing. A lad of seventeen cannot be put in an ordinary nursing home usually housing the aged or terminal cancer case and so the Coordinator with the help of the Family and Children's Agency, a Community Chest facility, found a foster home for Bill with a retired nurse. She arranged for the Red Cross Motor Corps station wagon to bring him to the Center in the morning at nine o'clock and come for him at four o'clock in the afternoon five days a week. She also arranged for a teacher from the homebound program of the public schools to send a teacher to the Center so that he will continue his education. Moreover, the Vocational Officer from the Bureau of Vocational Rehabilitation assigned to the Center has given him intelligence and aptitude tests to determine his possibilities for future vocational prospects and advise him on his choice of school subjects. Bill said he would like to be a radio an-

nouncer, but the Vocational Officer found that he did not realize that one must have an interest in history, English, composition, etc., to be a radio announcer. In his aptitude tests, mechanical interests had the priority and the Occupational Therapy Department found that he has excellent hand skills. Therefore, he is advised to include such subjects as mathematics and mechanical drawing. The realization that there is something besides being a disc jockey in the field of radio announcing has steadied him in his approach toward his future.

His therapeutic program at the Center began after he was seen by the orthopedic consultant at the request of his local physician. The orthopedist at the Center ordered braces and crutches after an evaluation based on a muscle test given at the Center and compared with the muscle test sent over from the hospital where he had been hospitalized in the acute and early convalescent stages of poliomyelitis. The orthopedist with the supervisor of services and the heads of the Physical Therapy and Occupational Therapy Departments then outlined a program for Bill. It is the duty of the supervisor to coordinate all the activities of Bill's daily program as well as supervise the students in clinical practice who help in Bill's treatment. His schedule is on a half-hour basis as it is felt that a change of activity is tantamount to rest. Bill's schedule for the day is:

9:30—Parallel Bar Exercises in class. This includes balance, push-ups from the bars, etc., preparatory to:

10:00—Crutch class, preparatory to:

10:30—Individual gait training.

11:00—Occupational Therapy. Bill's hands are not affected and so his occupational therapy has a twofold purpose: To condition him to longer periods of standing which he does supported at a high work bench, and to work at his mechanical drawing to further his vocational prospects.

11:30—Lunch. A high caloric diet with emphasis on protein content is provided Bill at lunch. A home economics expert from the Pacific Gas and Electric Company and the nutritionist in charge of the school lunch program have worked out the menus so that the patients will have high energy food without allowing them to become obese. The cafeteria is provided with a paid cook by the American Women's Voluntary Services.

12:30—Skills of stairs, curbs, street and bus travel.

1:00—Mat Exercises in class for general reconditioning.

1:30—Daily Living Skills. Taking braces off and on, training from bed, to chair, to crutches. Daily hygiene skills. The Center has a bathroom fully equipped with toilet, basin, tub, and shower for this training.

2:00—Progressive resistance exercises to arms. Bill has progressed so that now he can climb to the ceiling of the gymnasium on the climbing rope with his arm power which has been built up progressively so that now he has the necessary power for swing-through crutch walking.

2:30—On Monday and Thursday, his teacher from the Public Schools comes for an hour. Bill takes English, United States history, geometry, and mechanical drawing. His teaching is individual and the time allotted is in accordance with the California school law.

2:30 to 4:00—On Tuesday, Wednesday, and Friday, when Bill does not have school, his program is varied. Some time is given to stretching his hamstrings and lower back which have not yet attained their normal length. At first, he had Guthrie-Smith exercises for his back and abdominal muscles, but they have been discontinued now that he is mastering the swing-through crutch gait. The rest of the time is given to games which at the end of a quite strenuous day usually are wheel chair games or punching the bag, or if he is tired, maybe a quiet game of checkers with another patient.

Now that Bill has mastered the street curbs, steps, the revolving door, and the stationary bus set up in the Center, he is taken on the street to realistically confront these hazards. Twice a week, in his Daily Living Skills period, a city bus drives up to the Center and takes a group of patients for a ride where the attending physical therapist has them practice the graded activities that comprise all the realities of crowded bus transportation. Once a month, or more often if decreed

necessary, Bill is reexamined by the orthopedic consultant and a progress report is sent to his local physician and to his paying agency.

Bill belongs to a club, The Challengers, organized by the polios of the Bay Area. Bill has printed the membership cards, the meeting notices, and the stationery for The Challengers on the occupational therapy printing press. The Challengers meet at the Center. At some meetings, problems such as employment, home industry, etc., are considered. Some are social meetings with dinner and entertainment. Even the city ambulance drivers, a service contributed by the Board of Health for the very severely handicapped, cooperate by coming at 9:30 P.M. instead of 4:00 o'clock so that these shut-ins may have some recreation.

The same story could be told for every handicapped individual at the Center. If it is an industrial injury, it may again be housing, transportation, and fees paid by the insurance company. Should the patient be an amputee, the close coordination between the physician, the physical therapist, the limb fitter, and the rehabilitation officer is an absolute must for effective results. In the Industrial Unit, the Center has set up, in its occupational therapy department, a work therapy program. Though a constant consideration, physical incapacity is not necessarily a reason for occupational incapacity. The analysis of the physical demands of the specific job, whether it be light or heavy, must match the physical capacity and endurance of the worker.

There are also other factors to be considered in returning the worker to the job. First, the labor market reflects his ability to get a job, and secondly, the average disabled workman is 40 to 45 years old. He has the necessary skills and experience in his own job and only for his own job. If the nature of his disability prevents him from performing all the tasks of his old job, he must, as far as possible, work with the same tools and in the same union as before injury. He has already succeeded in his job, his standard of living, friendships, adaptations of a working lifetime are based on the environment of his former job. And most important of all, he cannot change his union. Even willing to take the lesser wage of apprenticeship (the maximum age limit of apprenticeship is usually 25 to 30 years old), he is prevented from entering a new trade.

To this purpose, the work therapy program is set up, directing the injured workman toward the positive approach of reconditioning to work and ultimate living instead of the negative approach of considering only range of joint motion and amount of strength. Teamwork between the physician in charge and the physical and occupational therapists, constantly keeping the work objective before the disabled man, is essential if he is to return to work at an early date to the mutual advantage of the insurance company and the patient.

Motivation in the workshop, on a trial-and-error basis, has been based on the following procedures. A laboratory has been set up where the handicapped or disabled person uses the tools of his trade wherever possible. The patient is given an achievement test to find out which physical demands of his job are impossible and where the emphasis must be placed to get him back to work. This has a salutary effect on the patient, who begins to think in terms of work instead of rehearsing his past unhappy history. Often for the first time since his accident, he is looking forward, not backward.

It has been found that simulated job demands, upgraded to the conditions of the job to be attained, can be modified to obtain all the elements of functional occupational therapy and are of greater interest to the patient than arts and crafts. The specially designed sander, the enlarged tool handle, the paint job made higher and higher give the necessary special exercises to the injured part and, at the same time, the patient sees the job objective coming nearer.

Men's work for men and women's work for women is the rule in the workshop. To have a man weaving in an industrial area where there are no textile mills has a morbid implication that he may never go back to a man's work.

Working for others has been the best motivation tried in the workshop. Having seen cerebral palsied children, the men in the workshop have made quantities of equipment, including work benches, desks, chairs, peg boards, looms, and other specially designed equipment for a spastic school in the area. Massage tables and mirrors for physical therapy have been projects. The patients have made the ladders, loading platforms, gravel pit, and pulleys for the simulated work tests and the heavy resistance exercises in the gymnasium. They have soundproofed an office and made the steps, the bus stairs, the ramps, and the walking bars for the gait training of the polios, amputees, and paraplegics. They have painted the shuffleboards on the floor for low painting jobs and the pillars and ceiling for high jobs. To plan projects that help make life easier for someone else who has been disabled has been found to be a successful experiment in motivation.

A report containing the measurements and the

tests as well as the subjective symptoms and attitudes of the injured workman is sent at the end of every month to the physician and the insurance company. If his work capacity functional tests geared to putting him back to his old job by having him use the tools of his trade show that he will not be able to work at his old job, the rehabilitation officer from the Bureau of Vocational Rehabilitation will offer his services. The coordinator of services at the Center may have to contact the family, the union, the claims adjuster of the insurance company, the employer, the social worker of a former facility, or any number of persons whose influence may have a direct bearing on the case.

I have told the story of Bill in detail to illustrate that the many elements that make up a community must become part of administration to operate a community center. However, this story does not portray the innumerable details of daily administration such as the maintenance of the plant, heat, water, light, laundry, janitorial services, housekeeping records, reports, bookkeeping, fees, billing, budgets, insurance, leasehold improvements, equipment, and supplies, which are a daily concern of the Administrator.

The Administrator cannot be a specialist in all things. This brings us, then, to the most important administrative function; that is, the Administrator's duty to properly select the staff. All members of the staff are of equal importance, from the telephone receptionist who represents the Center to the physician or patient on the other end of the wire, to the supervisor of professional services, who is responsible for the actual treatment program. I repeat, it is the duty of the Administrator to properly select his staff, but having found the right person for each responsibility, it is the duty of the Administrator to allow the staff to not only take its responsibilities, but to enjoy the rewards of a job well done. Department programs are more alive and better executed if the workers in them have a voice in their planning. They must be discussed, not only with the Administrator, but at interdepartmental meetings and administrative problems such as finance, etc., must be discussed with all the staff. The key to human relations is the proper training of all supervisors from top management to the person who supervises only one or two other individuals. Employee benefits such as sick leave, vacations, and the like, do not of themselves guarantee satisfied and efficient workers. Group and individual tensions often are due to sins of omission, rather than of commission and are carried over to the patient and reflected in patient care. The old saying, "You are down on what you are not up on," comes into this picture. Happy is the organization where the staff understands the problems of the Administrator and where the Administrator understands the problems of the staff and this can come about only by complete frank discussions on all activities.

I once worked in a small hospital with about 50 beds which was finally condemned by the Board of Health because it was unsanitary and not fit for patient care. It was old, a fire and earthquake hazard and very difficult to keep clean. However, when one walked in the door, one realized that this was a happy hospital. It had a reputation for having the best surgery in town, for having the best meals in town, for having the best nursing care in town, and may I boast, of having the best physical therapy department in town.

Why was this? The Administrator gave every department head full responsibility for his department and having given that responsibility, he got the results of his confidence in interested and enthusiastic workers. He treated employees as adults and expected them to react as such. He weeded out weakness in an employee rather than trying to correct it. He found the secure worker is the enthusiastic worker. Enthusiasm is contagious, both to the fellow worker and patients. A full understanding, not only of the administrative problems, but the problems of the other departments gives that mutual respect between departments that is necessary for all workers to have when their different skills are directed toward the individual patient.

To this effect, the Rehabilitation Center of San Francisco has attempted to have four types of staff meetings: (1) On patient problems. This staff meeting is attended by the orthopedic consultant, the senior orthopedic resident, all members of the staff, including the telephone operator, secretaries, bookkeeper, and students. At such a meeting, an individual patient program may be discussed and the patient may be reevaluated for further treatment. Perhaps a condition which is common to many patients may be discussed. (2) On finance problems. Every month, the balance sheet and departmental income and expense statements are discussed with the heads of departments. Each department submits its own budget which guides the Administrator and the Board of Directors in budget consideration. These conferences also keep each department informed on its own financial status so that they may cooperate with administration in cost control. (3) A staff meeting is attended by all members of the staff and is given to such matters as discussion of malprac-

COMMUNITY RELATIONSHIPS OF THE REHABILITATION CENTER OF SAN FRANCISCO, INC.

Incorporated by State of California as a non profit corporation.
Licensed as a Clinic by the City and County of San Francisco.
Licensed as an Institute for the handicapped by the State of California.
Member of the Western Hospital Association.

SOURCES OF FUNDS

Grants and Aid
Donations
Fees

CONTRIBUTED SERVICES

Contributed Services through Board Members
- Lawyer
- Architect
- Public Relations Service
- Mimeographing

Other contributed services
- Cafeteria—American Women's Voluntary Services
- Manual Arts Teacher—Board of Education
- Visiting Homebound Teachers—Board of Education
- Ambulance Transportation—Board of Health
- Bus Service for Daily Skills Program—Municipal Railway
- Homebound Occupational Therapy—San Francisco Guild for Crippled Children
- Taxi Script Books from various organizations
- Motor Transport Service—American Red Cross
- Rehabilitation Officer assigned to Center—San Francisco District Bureau of Vocational Rehabilitation
- Volunteers—A.W.V.S. and Red Cross

COMMUNITY RESOURCES

Public

City of San Francisco
- Board of Education
- Board of Health
- Municipal Railway
- Police Department

State of California
- Bureau of Vocational Rehabilitation
- Crippled Children's Services

Veterans' Bureau
- California Physicians' Service
- Veterans' Service

Private

- American Women's Voluntary Service
- Rosenberg Foundation of California
- Nat'l Foundation for Infantile Paralysis (nat'l, state, and northern California chapters)
- San Francisco Guild for Crippled Children
- California Society for Crippled Children (state and northern California chapters)
- American Red Cross (Bay Area counties)
- Avery-Fuller Children's Center
- Eastern Star of Eldorado County
- Doctors' Daughters
- State and Private Insurance Companies
- Hospitals, clinics, and other social agencies
- Family and Children's Agency

CENTER AS COMMUNITY FACILITY

Meeting place for:

- The Challengers—Polio Club
- Possibilities Unlimited—Amputee Club
- No. California Chapter—A.P.T.A.
- No. California Chapter—A.O.T.A.
- Community Chest Committees, etc.

tice insurance, personnel policies, and any other problems which might affect the staff personally. To this purpose, a committee has been formed by the staff. It is made up of one member elected by each department. Thus, there is a member representing the occupational therapy department of the Industrial Unit, the physical therapy department of the Industrial Unit, the occupational therapy department of the Polio Unit, the physical therapy department of the Polio Unit, and the secretarial staff. It has a chairman and all questions of personnel policy come to this committee who, in turn, presents the problem to the Administrator. If these problems concern the general policy of the Center, the Administrator refers them to the Board of Directors and/or any or all of the advisory committees. (4) An educational staff meeting is an open meeting where movies, slides, talks from community facilities on mutual interests, and lectures are presented.

The charts accompanying this article are self-explanatory. However, I could not write of administration without a description of the Board of Directors, the Advisory Boards and a word about the Center as a community agency, as each entity has an indispensable role in its contribution to the complete program. Each in its turn reflects itself in the services to the handicapped.

The Center is a nonprofit organization incorporated under the laws of the State of California with a Board of Directors comprising eleven persons. These persons represent a cross-section

of community interest representing such organizations as the American Women's Voluntary Services who were the original sponsors of the Rehabilitation Center of San Francisco, service agencies such as the California Society for Crippled Children, industry, insurance, banking, labor, and medicine. One of the physicians on the Board of Directors is a professor of orthopedics at the University of California Medical School and the other the head of the Department of Psychiatry at Stanford University Medical School. Other interests represented are public relations, employers of the handicapped, and members of other hospital boards. The Board of Directors is an active one, each member being engaged in contributing services to the Center that are inherent in his or her community interests. The Board is actively advised by the three advisory committees—the medical advisory committee, the insurance advisory committee, and the professional schools advisory committee.

The Medical Advisory Board is made up of 25 members representing physicians of all specialties such as industrial surgery, orthopedics, pediatrics, general medicine, arthritis, psychiatry, neurosurgery, etc. It advises both the Administrator and the Board of Directors, sets the medical policies for the Center and helps in public relations. No medical policies are adopted without referral to the Medical Advisory Board. The Insurance Advisory Board was elected by the California Casualty and Claims Association. It comprises seven claims specialists from insurance companies which write workmen's compensation insurance. This Advisory Board is called upon by the Board of Directors and the Administrator for advice on the many complex insurance problems that arise in the period of convalescence prior to the return of the injured workman to his job. The Professional Schools Advisory Board members are the technical directors of the Bay Area physical therapy and occupational therapy schools, which send interns in these fields for their clinical practice. The supervisor of professional services may call on this Advisory Board or any member for counsel on clinical practice problems.

There are many community organizations directly interested in the Center. These organizations are both public and private and function in various ways. Such organizations as the Crippled Children's Services and the State Vocational Rehabilitation Bureau may act in an advisory capacity as well as pay for individual children or adults on their physical restoration programs. For example: The State Vocational Rehabilitation Bureau provides vocational guidance and placement for patients at the Center by a direct agreement with the district supervisor of the Vocational Bureau who has assigned a rehabilitation officer to the Center as well as act as a paying agency for rehabilitation services to one of their clients.

The only qualification for admittance is a physician's prescription and direction. The patient source is the community's list of physicians. The physician in charge of the patient is directly responsible for the prescription, direction, and termination of his patient, and gives his directions directly to the supervisor of services. In turn, she relates his directions to the various physical and occupational therapists caring for that patient. To him and to the paying agency go a confirmation of the fact that a patient has been accepted at the Center, a statement of what treatment the patient is receiving, and to the physician, a request for further directions if the statement does not meet with his approval and to the paying agency, a statement of what the charges will be. If a patient is paid for by an agency such as the State Vocational Bureau or the local chapter of the National Foundation for Infantile Paralysis or the Crippled Children's Bureau who have in their organization the necessity for written authorization before a patient can be accepted, the Center receives the authorization for payment before the patient is accepted. The insurance companies do not necessarily insist on written authorization and therefore, that patient is accepted immediately upon physician's orders. However, in ninety per cent of the cases, a confirmation card comes back from the insurance company.

The orthopedic consultant who is on the staff of the Rehabilitation Center sees only the poliomyelitis cases or his own cases. He does not see cases of other physicians unless so requested. He holds clinic once a week, in which he examines poliomyelitis cases, either upon entrance or reevaluation and furtherance of program. A rotating senior orthopedic resident from the University of California Medical School is assigned to the Center and is under the direct supervision of the orthopedic consultant.

The educational program at the Center is a definite entity and is under the supervision of the supervisor of services. The Center has interns in clinical practice from the University of California Medical School and Stanford University Physical Therapy School and from Mills College, San Jose State, and other occupational therapy schools. The Center has held demonstration programs for medical conferences and workshops for graduate students and physicians. As part of the Polio Unit, Stanford University has placed a research worker

ADMINISTRATIVE CHART OF THE REHABILITATION CENTER OF SAN FRANCISCO, INC.

ADVISORY BOARDS

Medical Advisory Board
Insurance Advisory Board
Professional Schools Advisory Board

BOARD OF DIRECTORS

1. A.W.V.S.
2. A.W.V.S.
3. Banker
4. Orthopedist, University of California Medical School
5. Psychiatrist, Stanford University Medical School
6. California Society for Crippled Children
7. Insurance Company
8. Industrialist
9. Public Relations
10. Private Citizen
11. Private Citizen

MEDICAL

Medical Advisory Board
(Chairman and twenty-five Members)
Orthopedic Consultant to Polio Unit
Senior Resident (Orthopedic Service of University of California Medical School)
Referring physician in charge of patient

ADMINISTRATOR

Housing
Arranged by Coordinator

Transportation
Red Cross
City ambulance
Donated taxi script books

Visiting Teachers of Handicapped
Public school homebound program
Tutorial—Bureau of Vocational Rehabilitation
Volunteers

Housekeeping
Janitors
Orderly
Ward helper

Supervisor of Professional Services (supervisor of educational program)
Coordinator (medical social worker)

Vocational Guidance
Rehabilitation Officer assigned to Center by San Francisco District of Bureau of Vocational Rehabilitation

Educational Services
Physical therapy interns
Occupational therapy interns
Workshops
Demonstration programs
Moving pictures, slides
Lectures
Staff meetings
Research

Business Office
Bookkeeper
P.B.X. Operator
Secretary
C.P.A.

Cafeteria
A.W.V.S.
For staff
For patients

PROFESSIONAL SERVICES

UNIT FOR INDUSTRIAL INJURIES, AMPUTEES, ARTHRITICS, FRACTURES, NEUROMUSCULAR DISABILITIES, ETC.

(On Grant from the Rosenberg Foundation of California)

Physical Therapy
Head of department, staff and interns
Individual physical therapy treatment
Group exercises (gymnasium)
Progressive resistance exercises
Muscle testing and training
Training in functional activities (objective testing)
Training in locomotion (objective testing)
Training in daily living skills (objective testing)
Amputation program (objective testing)

Occupational Therapy
Head of department, staff, manual arts teacher and interns
Remedial exercises through occupational therapy
Training (objective testing) in hand skills
Training (objective testing) in work skills
Training (objective testing) in daily living skills
Progressive work tolerance
Work aptitude
Work capacity (objective testing)
Recreation

UNIT FOR POLIOMYELITIS

(On Grant from the National Foundation for Infantile Paralysis)

Physical Therapy
Head of department, staff and interns
Heat
U.V.R.
Muscle testing and training
Guthrie-Smith apparatus
Group exercises (gymnasium)
Progressive resistance exercises
Training in functional activities (objective testing)
Training in locomotion (objective testing)
Training in daily living skills (objective testing)

Occupational Therapy
Head of department, staff and interns
Remedial exercises through occupational therapy
Wheel chair activities (objective testing)
Training (objective testing) in hand skills
Training (objective testing) in daily living skills
Training (objective testing) in functional activities of work, school, housekeeping
Progressive work tolerance
Work aptitude
Work capacity
Recreation

Clinic
Orthopedic Consultant
Evaluation and determination of program for polio patients

HOME BOUND SERVICES

Physical Therapy

Occupational Therapy
(On Grant from the San Francisco Guild for Crippled Children)

at the Center. Under the Grant from the National Foundation for Infantile Paralysis to Stanford University, the polio patients are tested with Dr. Beasley's myodynemeter.

Finance in the Center is not only the fees for the patients, but also the Center has been the recipient of several grants and aid. These are from the National Foundation for Infantile Paralysis, the San Francisco Guild for Crippled Children, and the Rosenberg Foundation of San Francisco. It also has been the recipient of donations both in money and services. For example, a leading lawyer in San Francisco gives free legal advice and a leading architect has designed the interior of the building. The Board of Education furnishes school teachers for the children who are at the Center and also under the adult education department, a mechanical arts teacher in the Industrial Occupational Therapy Department. A member of the Board of Directors representing public relations, lends the staff one of their paid employees for all publicity.

Robert Hutchins, Chancellor of the University of Chicago, in a bulletin addressed to the alumni of that institution, made the statement that an institution could be run without a bank balance. This is based on giving services. Having given a service to the community which is shown to have a definite need, the community will see the need and provide the finances for the service.

The Rehabilitation Center of San Francisco, Inc., is an institution only two and one-half years old. Its growth has been so rapid that the complexity of its administrative problems are by no means all solved. There are limitations necessitated by its financial structure, but its scope is unlimited. The Board and the staff see many unmet rehabilitation needs in the community, and to meet these needs, they are planning for tomorrow.

Reprints Available

One free copy of each scientific reprint (except the History of the American Physical Therapy Association, and the Anterior Poliomyelitis and Cerebral Palsy Issues of the REVIEW will be provided upon request to all members, students in the approved schools and libraries. A small charge is made as indicated for additional copies to members, students and libraries, and for all copies to nonmembers. The informational brochures are available to all without charge. To obtain reprints write: American Physical Therapy Association, 1790 Broadway, New York 19, N. Y.

PHYSICAL THERAPY, A SERVICE AND A CAREER
An illustrated brochure, describing the opportunities for a career in physical therapy, available scholarships and educational requirements for entering a school of physical therapy. (Made available through National Foundation for Infantile Paralysis funds.)

OUR ASSOCIATION
An informational booklet on the activities, scope and services of the American Physical Therapy Association.

PHYSICAL THERAPY
A question and answer article covering the usual queries received on physical therapy.

PHYSICAL THERAPY—*Suggestions for Prospective Students.*
Outlines the professional course of study for college students preparing for physical therapy.

CODE OF ETHICS
Ethics for the physical therapist of the American Physical Therapy Association.

ESSENTIALS OF PROFESSIONAL ETHICS IN PHYSICAL THERAPY.
MARY HASKELL.

PERSONNEL POLICIES FOR QUALIFIED PHYSICAL THERAPISTS
Suggestions as to salary, hours, vacations, etc., by the American Physical Therapy Association.

NEW HORIZONS AND NEW RESPONSIBILITIES FOR THE PHYSICAL THERAPIST.
HOWARD A. RUSK, M.D.

APPROVED SCHOOLS OF PHYSICAL THERAPY
A list of schools approved by the Council on Medical Education and Hospitals of the American Medical Association.

EDUCATIONAL OPPORTUNITIES FOR PHYSICAL THERAPISTS
A list of postgraduate programs offered by the approved schools and a list of specialized courses for physical therapists.

PHYSICAL THERAPY SECTION: *Its Scope and Employment Opportunities.*
This consists of 12 articles by various contributors on physical therapy in a state crippled children's service, public health service, the cerebral palsy field, the Veterans Administration, the industrial clinic, a curative workshop, a large general hospital, a small general hospital, a children's hospital, crippled children's schools, the physician's office or clinic group and the psychiatric field.

CARE OF PATIENTS WITH INFANTILE PARALYSIS: *Correlation in the Nursing and Physical Therapy Services.*
CARMELITA CALDERWOOD HEARST (5c)

POSTURE TRAINING FOR ADOLESCENTS
CAROLYN BOWEN (5c)

PHYSICAL THERAPY IN THE TREATMENT OF RHEUMATOID ARTHRITIS.
MARY E. NESBITT. (5c)

MARIE-STRUMPELL ARTHRITIS: *With Emphasis on a Physical Therapy Regime.*
LUCILE NIEHUS. (10c)

EMOTIONAL FACTORS IN RHEUMATOID ARTHRITIS: *Their Bearing on the Care and Rehabilitation of the Patient.*
ALFRED O. LUDWIG, M.D. (10c)

(Continued on page 512)

Wheel Chairs

George G. Deaver, M.D.

Wheel chairs must be selected to meet the patient's disability and the area in which it is to be most frequently used. The comfort of the patient must be given first consideration for if he cannot use the wheel chair with some degree of comfort it will be of little or no use. No two patients are exactly the same height and weight or have the same disabilities; therefore, it is essential that a chair be selected to meet the patient's needs. The selection of the chair must be made to meet the requirements of the area in which it is to be used and the obstacles that area presents. The amount of passage space allowed by the doors, hallways and arrangement of bathroom fixtures in the patient's home or office must be considered.

Types of Wheel Chairs

The wheel chair best suited to meet the needs of a disabled person is the collapsible type which is made of light chromium-plated metal with back rest and seat of fabric, footboards and large wheels which the patient can propel. These chairs are neat in appearance, are propelled with ease, give freedom of movement in relatively confined spaces, are easily folded for automobile transportation and give a maximum of comfort. There are several stock models of collapsible wheel chairs but modifications can be built into these standard model chairs to suit individual needs.

Wheels—Wheel chairs which are to be used out-of-doors should have the propelling wheels in the rear. The propelling wheels should be 24 inches in diameter and the front wheels 8 inches in diameter (Fig. 1). The 8-inch front wheels are less likely to become entangled in cracks, rugs and small objects than the standard 5-inch wheels (Fig. 3). The 8-inch wheels increase the length of the chair 3 inches and foot rests are inclined upward. This difference in length must be considered in relation to the area in which the chair is to be used. The tires on the stock models are of solid rubber but pneumatic tires may be purchased. The propelling wheels may be lowered to 20 inches if desired. The smaller wheels with the detachable side arms makes it possible for the patient to slide out of the side of the chair.

If the patient is to use the wheel chair indoors and the rooms are small and there are narrow, crooked passageways, the propelling wheels should be in front, because of their placement more nearly in the center of the chair (Fig. 2). The position of the wheels allows a complete pivot in an area which would require much maneuvering with the rear propulsion type. The position of the wheels must be considered in relation to the patient's disabilities. When there is weakness of the trunk muscles the rear propulsion wheels are desirable, as a semi-reclining position is automatically at-

Figure 1. Collapsible wheel chair with propelling wheels in the rear and 8-inch front wheels. The arm rests are upholstered and detachable.

Professor of Clinical Rehabilitation and Physical Medicine, New York University College of Medicine, 477 First Avenue, New York 16, N. Y., and Physician in charge of Physical Medicine, Bellevue and Lenox Hill Hospitals, New York City.

tained in order to reach the hand rims. If the propelling wheels were in front, it would be necessary to bend forward to reach and push them and the patient with weak trunk muscles may fall forward on his knees. Patients with double leg amputations need a special amputee chair which is designed to compensate for the loss of the weight of the legs. The rear propelling wheels are set further back, the front casters slightly further forward and there are no foot rests.

There is a special One Arm Drive chair for those who have only one good arm, such as the amputee and hemiplegic patient. The propelling wheel has two hand rims on the side of the patient's good hand. When the patient grasps and turns the two hand rims together, the chair moves forward in a straight line. When either hand rim is moved separately the chair will turn to the right or left, depending upon the hand rim used (Fig. 3).

Brakes—Every chair should have brakes in order to prevent rolling when on an incline or the patient desires to get out of the chair without its being held by another person (Fig. 3).

Back Rest—The back rest is made of fabric in order that the chair may be folded. There is a standard height for the back rest but it can be ordered slack or tight. If it is desirable to support the head, a head rest extension can be ordered which can be used with any chair (Fig. 2). The head rest can be easily removed when the chair is placed in an automobile.

Figure 2. Collapsible indoor wheel chair with adjustable back and head rest and adjustable leg rests with side panels.

Figure 3. Collapsible wheel chair with left arm drive, propelling wheels in the rear, 5-inch front wheels and brake.

Adjustable back and head rests can be obtained which permit lowering the back in any position to the horizontal.

The back rest can be opened in the middle and a zipper attached. This makes it possible for the patient to open the back rest and slide in and out of the back of the chair to get to and from the bed or the toilet seat. The back rest becomes very slack after a period of time. In order to prevent kyphosis and give the back more support, it often is advisable to have a special wooden back rest. This may be removed to fold the wheel chair.

Arm Rests—The standard wheel chairs have round metal arm rests (Fig. 2). When patients are confined to their wheel chairs for long periods it is more desirable to have the flat wooden or the upholstered arm rests. These arm rests are bolted to the chair tubing and do not increase the width of the chair (Fig. 1).

Detachable arms are useful for patients who desire to enter and leave the chair from the side. It is also an additional aid for close approach to a table or desk. They can also be made with a desk arm which can be made permanently attached to the chair or detachable (Fig. 1).

Seat—The height, depth and width of the chair seat must be considered in relation to the size of the patient, area in which it is to be used and prosthetic appliances worn by the patient. The seat of the standard wheel chair is usually 20 inches from the floor and 16 inches in width and depth. An airfoam cushion on the seat is needed for cool comfort as well as preventing dampness from absorption of perspiration.

Footboards and Leg Rest Panels—The footboards can be prescribed as to size, height and angle. The footboards usually are tilted upward at the front edge. The principal factor to consider is the ability of the patient to flex the knees to a 90 degree angle. If there are flexion contractures at the knees it will be necessary to have adjustable leg rests with panels to provide support behind the calves of the legs (Fig. 2).

Tray—A plywood tray can be purchased for attachment across the arms of the chair. This is useful for patients who desire to eat and work while in the chair.

Toe Loops and Heel Straps—It is difficult and often impossible for patients with spasticity in the lower extremities to keep their feet on the footboards. Toe loops and heel straps can be placed in the proper place on the footboards to hold the feet.

SUMMARY

In ordering a wheel chair it is essential to specify the parts which are needed to meet the needs of the patient and the conditions under which he lives and works.

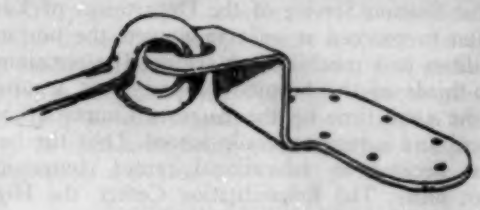
A Brace for the Correction of Inversion Tendency in Clubfoot

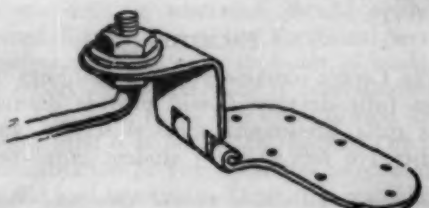
Emil D. W. Hauser, M.D.

This brace has been designed to keep the feet in abduction and external rotation while the child walks.

Two metal rods of unequal length are hinged to the inner borders of a pair of shoes, as shown in the top picture. The longer rod is attached to the anterior part of the shoes and the shorter rod is attached to the heels. Thus, while the patient is in a standing position with the feet even, the rods lie parallel to one another and force the shoes to toe out. The length of the rods is determined by the size of the child and the length of steps desired. The front rod usually is about three to four inches longer than the rod attached to the heels. It can be seen that the brace will force both feet to toe out for all positions of the feet during ambulation.

Two simple types of hinges which will allow motion in all directions are illustrated. The joint or hinge is attached to a flat metal plate which can be inserted between the layers of the soles and heels of the shoe.





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The Woodrow Wilson Rehabilitation Center

Josephine J. Buchanan, M.D.

Origin

As early as 1945 study was begun by officials of the Vocational Rehabilitation Service of Virginia on plans for the establishment of a facility that would meet the needs of the severely disabled and at the same time open new opportunities to all persons with disabilities who were in need of services not then readily available at reasonable cost. Many conferences were held with specialists of the Baruch Center of Physical Medicine, Medical College of Virginia, with rehabilitation workers in the State and in the Office of Vocational Rehabilitation Service, and others. A proposed organization gradually was evolved to include provisions for four major services: vocational diagnosis and counseling, physical medicine, prevocational and vocational training, and sheltered employment.

Acquiring a plant in which to house the program presented the greatest problem. This was solved in July 1947 by the acquisition, through the War Assets Administration, of a portion of the former Woodrow Wilson Army General Hospital, Fishersville, Virginia. Special appropriations by the State Legislature enabled the Vocational Rehabilitation Service of the Department of Education to proceed at once to convert the hospital facilities to a rehabilitation center. The remaining two-thirds of the hospital property was acquired at the same time by the Augusta County School Board and a regional trade school. Thus the hospital became an educational center comprising three units: The Rehabilitation Center, the High School, and the Technical School.

Facilities

The Center contains fifty-two buildings which, when fully developed, will provide dormitories, mess halls, classrooms, medical service, and administrative offices for a student enrollment of four hundred. The buildings are of semipermanent type, constructed of brick on hollow tile, with enclosed corridors connecting all buildings. Spacious grounds containing two hundred and twenty-nine acres surround the buildings. All necessary utilities and improvements are present.

Administration Building—Houses the administrative offices and the staff of the department of guidance and student personnel. Also contains post office and facilities for registration.

Medical Department—Contains infirmary, physical therapy building, functional training building, x-ray, medical laboratory, speech and hearing clinic, and office of medical director.

Dining Hall—Cafeteria style, seats 275. Table service to severely disabled.

Dormitories—Composed of units housing twenty-four students each. Double and single rooms with adequate bathroom facilities in all buildings. Men and women assigned to separate areas.

Classrooms—Spacious and well equipped. Some located in Rehabilitation Center area and some in Technical School area. All accessible to wheel chair and stretcher students.

Recreation Hall—Contains game rooms, music room, counseling rooms and large space for group social activities.

Red Cross Building—Contains bedrooms for forty, conference rooms, auditorium. Ideal for small conferences up to bed capacity. Each week student movies are shown here.

Conference Hall—Seats 125. Well lighted and ventilated. Favorite meeting place for medical, educational and civic groups.

Chapel—Well appointed religious center seating 250. In regular use for nondenominational religious activities.

Guest House—Contains 24 single rooms for overnight guests. Located on administrative circle. Other buildings provide room for staff apartments, maintenance shops and storage.

Director of Medical Services, Woodrow Wilson Rehabilitation Center, Fishersville, Virginia.

PURPOSE

The Rehabilitation Center is not a hospital. It does not provide care for the chronically or acutely ill, nor for those requiring medical or surgical treatment. Its function is to provide counseling, physical restoration, and vocational training to persons with residual handicapping disabilities, in order that they may again resume suitable employment.

MAJOR SERVICES PROVIDED

The primary services rendered to disabled people at the Center are as follows:

(a) *Vocational diagnosis and counseling.* A large percentage of the students coming to the Center already have vocational plans which have been found by the Rehabilitation Field Counselor to be necessary to prepare these clients for employment. In such cases the guidance department at the Center reviews the plan as submitted, makes sure that the client is enrolled in the proper courses and is oriented to his situation at the Center. Many clients, however, need special guidance procedures not feasible in the field counselor's work situation. The client is then sent to the Center where he can engage in a much more intensive and varied diagnostic study in which additional medical information, additional standard testing, and in many instances, exploratory periods in various classes are used to get the best possible evaluation of the potentialities of the client. Use of this study will result in most cases in a specific plan of rehabilitation. It may involve additional services of preparation at the Center or directions may be given to the field counselor for carrying out a suitable program in the client's own community or at another preparation facility. All students enrolled at the Center get the counseling required for satisfactory personal and vocational adjustment at the Center.

(b) *Physical restoration.* The services of physical restoration at the Center meet the needs of clients whose earlier treatment often had its beginning in a regular hospital. Specific physical therapy, functional training, teaching in the use of appliances and general medical supervision are the chief services. These are provided in a medical unit consisting of a well equipped physical therapy building, a functional training building, and adequate x-ray and laboratory facilities.

An infirmary which can house sixteen patients at one time is adjacent to the physical medicine service. Students with minor illnesses are cared for in the infirmary. Those with more serious conditions are sent to a nearby general hospital. No surgery is performed at the Center.

(c) *Vocational training.* There is at present training available at the Center in the following occupations: shoe repair, electric appliance repair, radio repair, watch repair, sewing, woodworking, auto mechanics, business education, cosmetology, laundry, on-the-job training. Students may be enrolled in vocational classes and in the physical medicine department concurrently. They may attend classes in a wheel chair or on stretcher and quite often special facilities are designed and constructed to meet the needs of a severely handicapped person.

Woodrow Wilson Rehabilitation Center

A state regional vocational school is located in close proximity to the Rehabilitation Center. It enrolls both handicapped and nonhandicapped students. Many of its classes are composed almost entirely of Rehabilitation trainees. All the training is organized with sufficient flexibility to meet individual capacities and individual needs.

(d) *Limbs and braces, etc.* Arrangements have been made whereby representatives of various orthopedic appliance companies will come to the Center upon call to assist in the provision of artificial limbs, braces, hearing aids, and the like.

(e) *Speech and hearing center.* A recent addition to the services at the Center is speech therapy, lip reading, hearing aid evaluation, and auditory training. Persons enrolled in this department devote only a small amount of time to speech training, the remainder being given to other vocational preparation activities.

ADMISSION REQUIREMENTS

Students desiring admission should apply to the nearest district office of the Vocational Service. A complete study of each applicant is made by a field supervisor to determine if rehabilitation is feasible. Admission to the Woodrow Wilson Rehabilitation Center is authorized by the State Office of the Rehabilitation Service upon the recommendation of the field supervisor. These requirements are observed in admitting clients to the Center.

(1) Each client must be recommended for admission by a field supervisor of the Rehabilitation Service. This recommendation is based on medical advice and a thorough case study.

(2) Prognosis for successful training and/or treatment must be good.

(3) There must be a good possibility of successful employment following completion of service at the Center.

(4) Client must give evidence of willingness to apply himself and to abide by the rules of the Center.

(5) Client must be able to take care of own personal needs or to learn such self-care through training and treatment within a reasonable length of time.

(6) Client must be physically able to attend classes or to receive physical therapy treatments with reasonable regularity.

STUDENT ACTIVITIES

In addition to training and treatment programs, each student is encouraged to participate in a variety of cultural and recreational activities as follows:

Student Association—Organization of all students which meets regularly and which serves as a planning and advisory body regarding the life of the Center.

Sunday School and Church—Regular services are held in the chapel for all who care to attend. Sunday School is conducted each Sunday morning. On Sunday afternoon members of the Augusta County Ministerial Association take turns in conducting worship services.

Recreation—Planned programs under the direction of a recreation specialist operate throughout the week. This includes movies, games, parties, hobby groups, swimming, picnics, and the like.

Student Publication—A student staff gets out monthly editions of "New Horizons," an engaging and inspirational student newspaper.

Supervised Study—For two hours each weekday evening students report to the library for special study period. Staff member is present to help with unusual problems.

LIVING ARRANGEMENTS

Students are assigned to single or double dormitory rooms equipped with single bed, dresser, closet, chair, and foot locker. Bed linen and blankets are furnished. A student's lounge and adequate bathroom facilities are present in each dormitory. Severely disabled persons, such as paraplegics and double amputees, are placed in the infirmary for the first weeks of their stay, during which time attendant and nursing service is constantly available. As sooon as these students have learned the fundamental skills of self-care they are moved into a dormitory room.

All students except those who are ill receive meals in the central dining hall. Those in wheel chairs propel their own chairs except for voluntary aid from other students.

COOPERATIVE RELATIONSHIPS

With Augusta County School Division. The Woodrow Wilson Education Center is comprised of these services: the Rehabilitation Center, the Technical School, and the High School. The High School is an integral unit of the Augusta County School system. The Technical School is a regional vocational school receiving substantial state aid, but owned and operated by Augusta County. Practically all the training of Rehabilitation Center students is supplied through a cooperative arrangement with the Technical School. In turn the county sponsored units secure utility services through Center-owned distribution systems.

With other Rehabilitation Divisions. The Center accepts students from other rehabilitation agencies, particularly those in nearby states, as far as facilities will permit after Virginia applicants have been accommodated. Services are provided at cost. Care is taken to maintain a continuity between the counseling of the out-of-state student by his home counselor and by the counseling staff of the Center. The same standards of admission apply to all cases.

West Virginia Industrial Commission. This agency has given encouragement throughout to the establishment of the Center and has rendered major assistance in making known the services of the Center to industrial physicians, casualty insurance companies, and to injured workmen themselves. The Commission has approved the Physical Medicine Department of the Center for use by insurance companies in providing physical rehabilitation service to their beneficiaries.

With Rehabilitation Committee of the Medical Society of Virginia. This committee has provided invaluable consultative services in the establishment of the Center. Frequent visits to the Center have given the members of the committee first-hand knowledge of the organization and operation of its program. This committee also has publicized the facilities of the Center among the members of the Medical Society through articles in the State Medical Journal, addresses to medical groups, and by an exhibit at the Society's Annual Meeting.

With University of Virginia Hospital and Medical School. The staff of this hospital has been

most helpful in providing special diagnostic and treatment services for students at the Center. Various staff members also have served as consultants on special medical problems and in staff training.

With United Mine Workers Welfare and Retirement Fund. Through a cooperative agreement between this organization and the rehabilitation agency, disabled miners, in whom there is a mutual interest, have been admitted to the Center for physical and vocational rehabilitation. Representatives of U.M.W.A. have given valuable advice regarding the development and improvement of the services of the Center.

MEDICAL SERVICE

The Medical Service of Woodrow Wilson Rehabilitation Center is concerned chiefly with supplying such treatments and skills as will produce for the handicapped individual the fullest possible functioning usefulness of his body. This includes not only medical care for his general health but also a comprehensive program of physical therapy and physical rehabilitation procedures. This is accomplished with every type of modern physical therapy equipment and by highly specialized physical therapists. The ultimate aim is to give to every individual the highest functional ability with which to earn a living, and with which to enjoy living.

Services

(1) *Student Health Service*

a. *Dispensary*—First Aid and ambulant treatment.

b. *Infirmary*—Bed care for minor illnesses (severe or extended illness referred to a general hospital).

Care and training for severely disabled individuals. Here nurses and aides train the disabled to care for themselves. This includes dressing, bathing, and toilet use, transfer from bed to chair, and bladder and bowel control for those who need it.

(2) *Medical Examination*—Every student who is enrolled at the Center receives a complete physical examination by the physician. Thus any possibilities for physical improvement which previously may have been overlooked or unrecognized are found, and treatment is prescribed for them. All laboratory procedures can be done at the Center.

(3) *Specific Physical Therapy*—All forms of thermotherapy, electrotherapy, hydrotherapy, mechanotherapy, and therapeutic exercises are utilized by physical therapists in securing the greatest possible improvement in individual muscles, nerves, joints, and tissues and in the functioning of these as a coordinated whole.

(4) *Functional Training*—Here the disabled individual who has already profited from specific physical therapy learns to perform those activities which are required in living in a normal society; for example, climbing and descending stairs, maneuvering hills, rough terrain, and obstacles, crossing streets, boarding public conveyances, getting up and down from all kinds of chairs, and all other activities inherent in daily living. Each individual must achieve these accomplishments in order to pursue other than sedentary or homebound occupations.

(5) *Prosthesis and Brace Fitting*—All measurements, fittings and adjustments of prostheses and braces are supervised by the physician and physical therapists. Representatives of all appliance companies visit the Center and work closely with its medical staff.

(6) *Speech Therapy*—A graduate speech therapist gives corrective therapy to all who need it.

Extra-Mural Medical Services

(1) *Use of Specialists*—Wherever consultation by a specialist is indicated, provisions are available for this service which is readily used. Either privately practicing specialists or those from many of Virginia's large hospitals are called.

(2) *Hospital Care*—All severe illnesses or surgical procedures are cared for by one of the nearby hospitals (University of Virginia, Roanoke, Medical College of Virginia, and others). Whenever feasible, the individual may be referred to a hospital in his home community if he so requests.

(3) *Prostheses*—The Center utilizes the services of all appliance makers. It prefers those who can give adequate and speedy service to those enrolled at the Center.

The following is a diagnostic list of conditions seen in the Center since its opening in November 1947:

Amputations	53
Arthritis	18
Back Conditions—	
(a) Herniated intervertebral disc	3
(b) Lumbosacral instability with fusion	6
(c) Scoliosis	8
Bilateral Hip Arthroplasties	1
Bronchial Asthma	1
Buergers Disease	2
Burn	1
Cardiovascular Disease	2
Cardiac Disease	6

Cerebellar Ataxia	1	Nerve Injuries	2
Club Foot	2	Neurofibromatosis	1
Cerebral Palsy	24	Neurosis	3
Contractures	11	Neurocirculatory Asthenia	1
Deformities	8	Osteomyelitis	5
Dementia Praecox	1	Parkinson's Disease	2
Diabetes	4	Poliomyelitis	48
Dislocations	4	Psychoneurosis, Hysteria	1
Epilepsy	7	Raynaud's Disease	1
Fractures	18	Speech Defects	12
Glandular Disturbance	1	Spina Bifida	1
Glomerulonephritis	1	Spinal Cord Injuries	32
Hearing Loss	13	Tabes Dorsalis	3
Hemiplegia	8	Tuberculosis, Arrested	31
Hip Fusion	1	Visual Disturbances	8
Incoordination	1	Psychological testing only, left before medical examination could be made, and those registered only	21
Legges Perthes Disease	3		
Meningitis (Residual effects)	2	Total	394
Mental Retardation	7		
Muscular Dystrophy	4		

Reprints Available

(Continued from page 594)

UNDERLYING MECHANISMS IN SYMPTOMS OF POLIOMYELITIS: *Their Bearing Upon Treatment.*
THOMAS GUCKER 3RD, M.D. (10c)

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THE NEED FOR PHYSICAL THERAPY IN POSTPARTUM CARE.
WILLIE REBECCA HARVEY. (20c)

REHABILITATION OF THE INJURED CHEST.
VICTOR P. SATINSKY, MAJ. MC, AUS, AND DORA DYKINS (20c)

THE MEAUREMENT OF JOINT MOTION.
MARGARET LEE MOORE (25c)

THE PHYSICAL THERAPY REVIEW—*Special Anterior Poliomyelitis Issue.* July-August 1947 (75c)
The magazine contains 11 articles by leading physicians and physical therapists on research and treatment of polio. There are 16 abstracts of articles on polio from current medical journals.

A HISTORY OF THE AMERICAN PHYSICAL THERAPY ASSOCIATION.
IDA M. HAZENHYER. (50c)
An account of the Association's activities and growth from 1921-1946.

THE PHYSICAL THERAPY REVIEW—*Special Cerebral Palsy Issue.* May-June 1948 (75c)
This magazine contains 8 articles by leading physicians and physical therapists on research and treatment of cerebral palsy. There are 5 abstracts of articles on cerebral palsy from current medical journals.

Available free of charge from Joint Orthopedic Nursing Advisory Service, 1790 Broadway, New York 19, N. Y.:

MAKING PHYSICS A PART OF THE CURRICULUM: *Three methods of incorporating physics in the nursing school curriculum.*
HESSEL H. FLITTER, R.N.

THE PATIENT WITH BULBAR-RESPIRATORY POLIOMYELITIS.
FREDERIC J. KOTTKE, M.D., AND WILLIAM G. KUBICEK, PH.D.

Modified Goniometer

With Practical Improvements

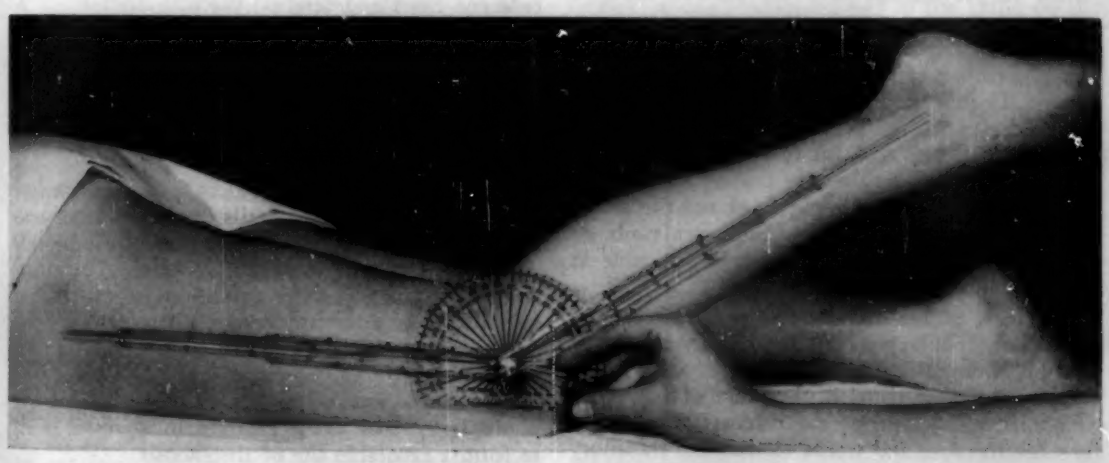
Frances Berresheim, Elizabeth R. McKown, B.S., and Elizabeth Schnake, B.A.

The importance of utilizing an accurate standard technic in the measuring and recording of joint motion is universally known to physician and physical therapist alike. Many instruments, some simple, others extremely complicated, have been devised in an attempt to lessen error and improve efficiency. The goniometer recently developed, while similar to those now in use, offers many improvements which assure a more accurate measurement in minimum time.

The instrument is composed of a light-weight transparent plastic material, which affords easy handling and accurate placement on designated landmarks. The body of the instrument is a partial circle with a horizontal base and provides two 360 degree scales approaching zero in opposing directions. These features permit the instrument to be aligned with a flat surface when desired and facilitates scale reading in either direction. Every degree is indicated by lines and every tenth degree is numerically marked.

Telescopic arms are easily adjustable from 7¼ inches when closed to 38 inches when extended. This proves useful in adapting the size of the instrument to the length of the part. Running through the center of the transparent arms are dark lines which superimpose the scale readings on the body and assure a more accurate reading.

A thumb screw at the axis, permitting stabilization of either or both arms, eliminates the necessity of reversing the instrument when attempting to obtain readings from right and left sides of the body. Either arm may be firmly secured at zero or any other point, while adjusting the other arm at the desired angle. Also, both arms may be fixed in any position for any duration, or until recordings are made on paper.



Arms extended for measurement of motion at knee joint.

This is a precision instrument, devised for accurate measurement and convenience. Because of its telescopic arms and 360 degree scale, it is adaptable to all joint motions. The transparent plastic material allows specific placements of the axis on landmarks and minimizes the weight. The thumbscrew feature at the base of the arms eliminates the necessity of excessive handling while the well-defined markings on the face of the instrument enable the operator to read the measurement with ease.

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This goniometer was developed by a group of the Physical Therapy Class in a student project on "Uniform Measurement of Joint Motion" at Northwestern University Medical School. The entire project was presented and exhibited in Boston at the 26th Annual Conference of the American Physical Therapy Association, June 1949.

Rehabilitation of the Hemiplegic Patient

Donald A Covalt, M.D.

It is estimated that there are approximately 1,250,000 hemiplegic patients in the United States and that they constitute one of the largest groups of individuals suffering from chronic neurological disease.

Medically, we have been interested in the hemiplegic patient during the acute phase of his illness and then forgotten him if he survived. Many of these patients are capable of learning to care for themselves and to walk again but, unfortunately, it has usually been left to the individual or to the family to provide the help the patient needs to return to an independent life.

It is the purpose of this paper to demonstrate that something can be done for the hemiplegic patient. Training can be done at home which will enable the patient to perform his self-care activities, in many cases to learn to walk again, and in some even to return to work.

It is our belief that the physician and the physical therapist should work together as a team, in order that the patient can go as far as possible in his rehabilitation.

A review of the neurological pathology of patients with apoplexy reveals that it may be caused by (1) thrombosis, (2) hemorrhage, or (3) embolism. These are listed in the order of frequency of occurrence. Spasm of the cerebral vessels may be a fourth cause and would explain the transitory hemiplegia occasionally seen.

There are two clinical manifestations of apoplexy, the first being the acute or general. The most common symptom of the acute manifestation is the disturbance of consciousness resulting in stupor or coma. The second manifestation is those local or focal signs of apoplexy which reflect immediately the loss of function of the particular part of the brain affected. This is, of course, the hemiplegia or paralysis.

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The causes of cerebral hemorrhage may be listed as follows:

(1) Arteriosclerotic vascular changes of the cerebral vessels.
(2) Syphilis of the cerebral vessels.
(3) Intoxications, such as of lead and alcohol.
(4) Infectious diseases.

In itself, hypertension is not sufficient to cause hemorrhage into the brain without nephritic changes and cerebral arteriosclerosis. We do know that continued hypertension eventually leads to an enlarged heart and cerebral vascular disease.

Embolism, the second cause of apoplexy, is most frequently the result of dislodgment of a vegetative embolus from the valves of the heart following rheumatic heart disease. Emboli also may be dislodged from the wall of the pulmonary vein or aorta.

Cerebral thrombosis is generally due to pathological alterations in the walls of the cerebral vessels or to changes in the rate and flow of the blood. Thrombosis is more common in cerebral arteriosclerosis or in any other condition in which the interior of the artery undergoes atheromatous conditions. Thrombotic occlusion is most common in past middle life and advanced age.

Infectious diseases, such as diphtheria and typhoid fever, may cause changes in a vessel wall to form a favorable site of thrombosis.

There is no part of the brain which is exempt from damage from thrombosis, hemorrhage, or embolism. However, the favorite sites of hemorrhage in the brain are in the lenticulo-striate and lenticulo-optic arteries. When these vessels rupture, there is involvement of the cerebral or basal ganglia and predominant involvement of the internal and external capsules and of the thalamus and striate bodies. Emboli are found in the terminal arteries and also in the bifurcations of the larger arteries such as the carotid and vertebral and these, in turn, may serve as the starting point for thrombosis.

As is the case with all patients who seek rehabilitation, it is necessary to select only those cases which are feasible. It is necessary to exclude those cases in which the rehabilitation cannot keep up with the pathological processes as seen in the patient with malignant hypertension or encephalomalacia or advanced senility. Rehabilitation may be started with patients with hypertension if it is believed that they can stand a trial period of activity. Such patients should be closely supervised and should have adequate rest periods to avoid fatigue. It has even been found that some patients have had a drop in pressure under a regimen of mild activity. All hemiplegic patients undergoing rehabilitation measures should be checked at least twice weekly for blood pressure, pulse rate, and general clinical condition.

In addition to being physically feasible, the patient himself must have the will power and motivation to carry out the rehabilitation program which, of necessity in many cases, may be fairly strenuous and may extend over a fairly long period of time.

Careful evaluation must be made of the mental and physical status of the patient with hemiplegia. A psychologist, or even a psychiatrist if necessary, should see the patient before rehabilitation is started to determine the patient's ability to learn simple procedures, such as tying his tie and dressing himself. Some hemiplegic patients are not able to retain instructions given a day or even an hour previously. Where the learning ability is affected to this extent, rehabilitation is not feasible.

The patient who is accepted for rehabilitation is first given a careful physical examination. After such an examination, a muscle test is given to determine the power of both the affected and unaffected muscles. Range of motion of joints is checked and noted. He also is given the activities of daily living test which consists of 102 items. Each item measures one activity such as the patient's ability to move from place to place in bed, to get from the bed to the wheel chair and back to the bed, dressing and undressing himself and combing his hair. The activities which the patient can do at the time of the first examination are marked in black; the unfilled blanks indicate the activities which the patient must learn to perform if he is to return to an independent life.

There are two simple tests which may be performed to determine whether the hemiplegic patient will be able to walk again. If the patient is able to move the arm on the affected side freely, there is every reason to believe he will be able to walk since the arm is usually more affected than the leg on the paralyzed side. If the patient is able to raise the affected leg an inch or two off the sheets while in a supine position, there should be sufficient muscle power remaining to permit him to walk again.

Rehabilitation for the feasible hemiplegic patient should be instituted early in the course of his illness. It is our experience that there will be no untoward results if the patient whose apoplexy has been caused by thrombosis or embolism starts on bed activities twenty-four hours after regaining consciousness. In those cases where hemorrhage has been the cause, the patient is kept on bed activities alone for the first three weeks and then is allowed to sit up in bed and start other simple active training procedures.

There are four procedures which should be carried out while the patient is bedridden to prevent the deformities so common in patients with hemiplegia:

(1) A footboard or posterior leg splint should be placed on the affected side to prevent toe drop and heel cord shortening.

(2) Sandbags should be placed along the outside of the affected leg to prevent outward rotation of the paralyzed leg.

(3) A small pillow placed in the axilla on the affected side will prevent adduction of the arm on the shoulder.

(4) Quadriceps setting should be started to maintain and improve the muscle strength of the quadriceps.

After the acute phase of the illness is over, the patient is started on active rehabilitation measures. At this time, a "U" rope of braided bandage may be attached to either footpost of the bed which will extend approximately three-fourths of the way up the bed. The patient is instructed to grasp the rope and pull himself to a sitting position, using the good hand to anchor the affected hand to the rope. Sitting up in bed early will improve the patient's sense of balance and will save him

Figure 1. Use of braided bandage rope to attain sitting position in bed.

Figure 2. Pulley therapy for shoulder with patient in sitting position.

many hours and days of practice when he stands again.

Speech therapy should be initiated early in the rehabilitation program. Therapy may be given under the direction of a speech therapist, speech pathologist, or if such trained personnel is not available, by a teacher of speech from a local school. It is essential that the family of the patient with aphasia be made to realize that although the speech has been affected, intelligence has not necessarily diminished.

Pulley therapy should be started while the patient is still in bed. A pulley can be arranged over the head of the bed to encourage movement of the arm on the affected side. The affected hand may be tied to the pulley rope with a fabric strap if necessary. The same procedure carried out for the lower extremities will train the patient in reciprocal motion which is essential in walking. This simple exercise will prevent the painful shoulder which so easily occurs in the hemiplegic patient and which is very painful. As the arm becomes more freely movable, the pain decreases. This procedure should be carried out fifteen minutes three times a day.

After a short period of bed strengthening exercises, the patient is ready to be taught to sit on the edge of the bed and then to stand. Ambulation training can be started by placing two kitchen chairs, back to back, by the side of the bed with sufficient room for the patient to stand in between. He is taught to grasp the back of one chair with the good hand and the other chair with the affected hand. It may be necessary to lace the affected hand to the back of the chair with a bandage at first. To reestablish reciprocal motion, the right foot is advanced as he pushes the left chair forward, and as the left foot advances, the right chair is pushed forward. It may be necessary at first for the therapist to assist in pushing the chair forward on the affected side.

We find that approximately fifty per cent of hemiplegic patients need short leg braces to correct the toe drop so frequently seen with this disability. The double-bar, short leg brace with a 90 degree stop is used in the majority of the patients. In less severe cases, the patient may be fitted with a spring type of brace which extends from the heel of the shoe up the posterior of the leg to the calf. For cosmetic reasons this brace is preferred by many patients.

As the patient progresses with this ambulation, he is taught to climb stairs, curbs, and how to get into a bus or automobile.

The hand on the affected side in hemiplegics is the last to recover and in many cases never does. Many patients can be taught to walk who will never regain the use of the hand. In these cases, it is necessary to teach the patient personal care activities such as how to tie his shoe laces with one hand, to dress himself, to button his shirt, and to feed himself. By using the appliances about the house, practice can be obtained in turning keys in door locks, dialing telephones, operating light switches, etc., so that the patient may become self-sufficient.

With such a simple but complete program, many of the complications usually found following apoplexy can be avoided and a great deal of time and ability can be salvaged.

Reciprocal Motion Skiis*

for Cerebral Palsied Children

Joan C. Kuhnen

A newly designed pair of Reciprocal Motion Skiis for the treatment of cerebral palsied children have been developed at Lenox Hill Cerebral Palsy Center where Dr. George G. Deaver is the Medical Director. They have proved to be of great value in teaching a reciprocal pattern of walking, strengthening various muscle groups, and teaching balance while in motion. They teach the child the proper distribution of body weight; that is, to balance the upper right quadrant over the lower left quadrant; the upper left quadrant over the lower right quadrant. They also allow the child to practice walking backwards.

Previous work has been done with skiis of different types, notably by Dr. Winthrop M. Phelps of Children's Rehabilitation Institute, Cockeysville, Maryland, who pioneered the use of skiis with poles for cerebral palsied children; ski-skates devised by Miss Mary Trainor of Children's Hospital, Boston, Massachusetts, and reciprocal action skiis designed by Miss Robertine St. James of Children's Rehabilitation Institute, Cockeysville, Maryland.[1]

The basic concept of the Reciprocal Motion Skiis is the establishment of a reciprocal pattern of walking. The importance of teaching this reciprocal pattern is well known. Dr. Temple Fay of Philadelphia, Pennsylvania, has for several years studied the importance of the simultaneous movement of the opposite arm and leg. He refers to this reciprocal action as a "crossed pattern" movement.[2]

In teaching a reciprocal pattern of walking, the physical therapist begins with table or mat exercise in a supine or prone position and progresses to reciprocal crawling and then to reciprocal walking in parallel bars. Finally, before the child learns to walk unassisted he is taught to walk in skiis. The skiis provide the necessary balance, they strengthen the leg muscles and teach leg reciprocation. They are an essential part of every training program for cerebral palsied children.

Reciprocal Motion Skiis are a natural development of older types of skiis. They have stable poles which are crossed near the base so that the right hand grasps the pole attached to the left ski, and the left hand grasps the pole attached to the right ski. Because the poles are stable and attached in this manner the child can walk in the skiis only with a true reciprocal pattern. When the left leg moves forward the right arm will likewise advance. In other words with each step the opposite arm and leg move simultaneously following the natural reciprocal pattern of walking.

These skiis teach the child to distribute his body weight properly and to balance while in motion. That is, to balance the upper right quadrant over the lower left quadrant of the opposite side; the upper left quadrant over the lower right quadrant of the opposite side. The motion of the opposite arm and leg occurring automatically with each step promotes proper distribution of body weight when walking.

The Reciprocal Motion Skiis have vertical guides running from front to back along the inner edges. These prevent internal and external rotation of the hips and prohibit a scissor gait. There are U-shaped locks which prevent the child from crossing the skiis but which allow them to move parallel to each other. By preventing crossing of the skiis either in front or in back, the physical therapist can teach the child to walk backwards also. This will help to strengthen the extensors of the hips and give him confidence.

For the child who is making progress in independent walking but who needs strengthening of leg muscles, the physical therapist places sandbags

Coordinator, Lenox Hill Cerebral Palsy Center, Lenox Hill Hospital, New York, N. Y.

*Purchased through Reciprocal Motion Skiis, 513 West 54th Street, New York, N. Y. Patent Pending.

Child in position to use Reciprocal Motion Skiis

in the back of each ski. The weight of the sandbags gives resistance to walking and strengthens the muscles. In either forward or backward walking, strengthening of various muscle groups occurs, i.e., quadriceps, hamstrings, extensors of the hips, flexors of the hips, and so forth.

These skiis are built purposely on a very broad base to prevent the child from tipping over. At a treatment center the child can practice without the guidance of the physical therapist and still be perfectly safe. In other words, after the child has finished his treatment the physical therapist can put him in the skiis knowing that he is practicing a true reciprocal pattern of walking, strengthening various muscle groups, learning balancing and the proper distribution of body weight, and yet he is perfectly safe even though he is unattended. This leaves her free to treat another child while the one in the skiis learns independence.

Another feature of the skiis is their use of color. These skiis are finished in red and yellow. The opposite arm and leg to be moved simultaneously in the reciprocal pattern are attached to a ski and pole which are the same color. Thus the child associates the movement of the right arm and left leg with red, and the movement of the left arm and right leg with yellow. This use of color permits visual learning as well as kinesthetic learning.

The use of two colors has been worked into a series of activities designed to establish a pattern of reciprocal motion. A red ribbon is placed on the right wrist and left shoe; a yellow ribbon on the left wrist and right shoe. The child walks in parallel bars and is instructed to move the two red ribbons (right arm and left leg); then the two yellow (left arm and right leg). He is walking with reciprocal motion of the arms and legs.

From parallel bars he progresses to Reciprocal Motion Skiis where the same two colors are used. The right hand holds the red pole which is attached to the left ski which is also red. The left hand holds the yellow pole which is attached to the right ski and which is also yellow. The child is instructed to move the two red, then the two yellow. With each step the child has reciprocal motion of the arms and legs. By making possible reciprocal walking in the ski-stage of the cerebral palsy training program, Reciprocal Motion Skiis provide a continuity of treatment heretofore unattainable. They are a natural and essential bridge from parallel bars to walking unassisted.

From Reciprocal Motion Skiis the child progresses to crutch walking if it is indicated. When using crutches a red ribbon is attached to the right crutch and the left shoe, and a yellow ribbon to the left crutch and the right shoe. This time the child is instructed to move the red crutch, yellow shoe, yellow crutch, red shoe. This produces a four-point gait. For a two-point gait the child is instructed to move the two yellow, then the two red.

When he learns to walk without the aid of crutches, ribbons are placed on his shoes and index fingers. He is instructed to move the two red, then the two yellow. This produces a reciprocal pattern of walking which in time will become his natural gait.

REFERENCES

1. St. James, Robertine: Reciprocal Action Skiis in the Treatment of Cerebral Palsy. Physical Therapy Review, September 1943.
2. Fay, Temple: The Neurophysical Aspect of Therapy in Cerebral Palsy. Archives of Physical Medicine, June 1948.
   Fay, Temple: Problems of Rehabilitation in Patients with Cerebral Palsy. Delaware State Medical Journal, March 1946.
   Fay, Temple: Observations on the Rehabilitation of Movements in Cerebral Palsy Problems. West Virginia Medical Journal, April 1946.

SCHOOLS APPROVED FOR TRAINING PHYSICAL THERAPISTS

By Council on Medical Education and Hospitals of the American Medical Association

Name and Location of School	Medical Director	Technical Director	Entrance Requirements	Length in Months	Classes Start	Tuition	Certificate, Degree, Diploma
CALIFORNIA							
Childrens Hospital, Los Angeles[1]	Samuel S. Mathews	Sarah S. Rogers	a[6]-b[6]-d	14	Sept	$300	Cert. or Degree
College of Medical Evangelists, Los Angeles[1]	F. B. Moor	R. Wm. Berdan	a-b-c-d	12	Sept	$225	Cert. or Degree
Univ. of So. California, Los Angeles[1]	Charles L. Lowman	Charlotte W. Anderson	a-b-d-e-g	14	Sept	$594	Cert. or Degree
Univ. of California Med. School, San Francisco[1]	Lucile M. Eising	Margery Wagner	d-e	12	Sept	$220[2]	Cert. or Degree
Stanford Univ., Stanford[1] (Palo Alto)	Wm. Northway	Lucille Daniels	a-d-e-f-g	12	Jan June		Cert. or Degree
Permanente Hospital, Oakland and Vallejo[1]	O. L. Huddleston	Dorothy Hoag	a-b-d	12	Sept July	$620 $200	Cert. or Degree Cert.
COLORADO							
Univ. of Colorado Med. Center, Denver[1]	Harold Dinken	Mary Lawrence	a-b-d	12	Sept	$300	Cert. or Degree
ILLINOIS							
Northwestern Univ. Med. School, Chicago	John S. Coulter	Gertrude Beard	a-b-d-e	12	Oct	$450	Cert.
IOWA							
Univ. of Iowa Med. School, Iowa City[1]	W. D. Paul	Olive C. Farr	a[6]-e	12	Sept	$200	Cert.
KANSAS							
Univ. of Kansas, School of Med., Kansas City[1]	Donald L. Rose	Lilyan G. Warner & Ruth Monteith	a-b-d-g	12	Feb Sept	$80[2]	Cert. or Degree
MASSACHUSETTS							
Bouve-Boston School of Phys. Educ., Boston	Howard Moore	Constance K. Greene	g	36	Sept	$550	Degree
Simmons College, Boston	Wm. T. Green / Arthur L. Watkins	Janet B. Merrill	a[6]-b-d-g	16-36	Sept	$650	Cert. or Degree
Boston Univ. College of Phys. Ed. for Women: Sargent College, Cambridge	Kenneth Christophe	Adelaide McGarrett	a-b-d-f-g	12 4 yrs.	Sept	$495	Cert. or Degree
MINNESOTA							
Univ. of Minnesota, Minneapolis[1]	Miland E. Knapp	Ruby M. Green	d-f-g	2 yrs.	Sept	$126[2]	Degree
Mayo Clinic, Rochester[1]	Earl C. Elkins	Harry Keown	a-b-c	12	Sept	None	Cert.
MISSOURI							
Washington Univ. School of Medicine, Barnes Hospital, St. Louis[1]	Sedgwick Mead	Beatrice F. Schulz	f	2 yrs.	Sept	$400[4]	Degree
St. Louis Univ. School of Nursing, St. Louis[1]	A. J. Kotkis	Sr. Mary Imelda	g	36	Jan Sept	$300	Degree
NEW YORK							
Albany Hospital, Albany	John W. Ghormley	Catherine Graham	a-b-d	12	Sept	$250	Cert.
Columbia Univ., New York[1]	Wm. B. Snow	Floy Pinkerton	a-e-f	1 or 2 yrs.	Sept	$450	Cert. or Degree
New York Univ. School of Education, New York[1]	George G. Deaver	Elizabeth C. Addoms	a[6]-b-d-g	12	Sept	$589	Cert. or Degree
NORTH CAROLINA							
Duke Univ. School of Med., Durham[1]	Lenox Baker	Helen Kaiser	a[6]-b[6]-d	15	Oct	$300	Cert.
OHIO							
Cleveland Clinic, Cleveland	S. G. Gamble	Anna Wetterhuus	a-b-d	12	Jan	$200	Cert.
PENNSYLVANIA							
D. T. Watson School of Physical Therapy, Leetsdale[1]	Jessie Wright	Kathryn Kelley	a[6]-b[6]-d	12	Oct	$300	Diploma
Graduate Hospital, Univ. of Pa., Philadelphia[1]	George M. Piersol	Dorothy Baethke	a-b[6]-e	12	Sept	$400	Cert.
TEXAS							
Hermann Hospital, School of Physical Therapy, Houston[1]	Oscar O. Selke, Jr.	Mary Elizabeth Kolb	a-b-d	12	Oct	$300	Cert. or Degree
Univ. of Texas School of Med., Galveston[1]	G. W. N. Eggers	Ruby Decker	a-b-d	12	Jan	$163[2]	Cert.
VIRGINIA							
Baruch Center of Physical Med. of Medical College of Virginia, Richmond[1]	Walter J. Lee	Susanne Hirt	a-b-c-g	12	Sept	$275[2]	Cert. or Degree
WISCONSIN							
Univ. of Wisconsin Med. School, Madison[1]	Harry D. Bouman	Margaret Kohli	a-b-f-g	12	Sept	$150[2]	Cert. or Degree
MEDICAL DEPARTMENT—U. S. ARMY							
(a) Medical Field Service School, Brooke Army Medical Center, San Antonio, Texas, and	James E. Tate, Lt. Col., M.C.	Agnes P. Snyder, Major, WMSC	b-e	12[5]	Nov	None	Cert.
(b) Fitzsimons General Hospital, Denver, Colorado, or	H. B. Luscombe, Colonel, M.C.	Elsie Kurancy, Major, WMSC	Completion of Medical Field Service School				
(c) Walter Reed General Hospital, Army Medical Center, Washington, D. C.	Emmett M. Smith, Colonel, M.C.	Barbara Robertson, Captain, WMSC	Completion of Medical Field Service School				

Entrance Requirements

For One Year Course: a = Graduation from accredited school of nursing; b = Baccalaureate degree with major in Physical Education; c = Two years of college with science courses; d = Three years of college with science courses; e = Baccalaureate degree with required science courses.

For Two Year Course: f = Two years of college with science courses.

For Four Year Degree Course: g = High school graduation.

[1] Male students admitted.
[2] Nonresidents charged additional fee.
[3] Certificate granted by Childrens Hospital Society; degree granted by University of California at Los Angeles.
[4] Tuition reduced second semester of second year.
[5] 12 months includes training at the Medical Field Service School and Fitzsimons or Walter Reed General Hospitals.
[6] Additional college science required.

Editorials

During recent years increasing emphasis has been placed on the use of functional exercise and activities in the treatment of the crippled and disabled. This is largely due to the impetus gained in the rehabilitation field during and after the last war. The concept that exercise should be designed to meet the needs of the patient for daily living is not new, but recently it has been stressed and publicized by the leaders in rehabilitation.

The number of rehabilitation centers in the United States is growing steadily and many of their methods are being incorporated in regular physical therapy departments.

Return of function always has been recognized as the primary aim in the administration of physical therapy. All other objectives are merely components of the whole treatment and are stepping-stones toward the final goal. However, we sometimes lose the long view through too much attention to minor details and technics. Someone has aptly stated: "Remember that every fracture has a person attached to it." This expresses the fact that adequate treatment must include re-establishment of the individual to the point where he can carry out functions of daily life. If we are to keep physical therapy worthy of its use then we must recognize the value of functional activities and make them an integral part of treatment.

Association Activities

Placement Service

This is a story of the Placement Service which should be known by all past, present or future applicants for positions. As usual, there are two sides to the story.

All too frequently we hear from potential employers that the physical therapists to whom we have referred them do not reply to communications. Whether the cause be procrastination, disinterest or thoughtlessness it is not good personal or professional manners. Unfortunately, such action reflects not only upon the individual but also upon the American Physical Therapy Association.

The other side of the story comes from the physical therapists. We hear of the physical therapist writing the employer, or making a trip to see him, only to find that the position has been filled for some time, or as in a recent instance not yet authorized.

Admittedly, we cannot change human nature, but we can modify it.

Each one of you is eligible for Placement Service as long as you are a member in good standing. The functioning of the Placement Service, therefore, is of concern to you. These are the simple ways in which you can help:

Two postal cards will accompany each notification of position openings. PLEASE return the appropriate one to us, with the information requested.

If you know of a person or institution wishing to employ a physical therapist, tell them about the American Physical Therapy Association Placement Service.

We are unalterably opposed to "job hopping," but if you know a physical therapist who is definitely planning to change his position, tell him about the American Physical Therapy Association Placement Service.

Twenty Years Ago

There were *13 chapters* of the American Physical Therapy Association: Cleveland, Chicago, Minnesota, New York, Northern California, Southern California, Oregon, Rhode Island, Wisconsin, Massachusetts, District of Columbia, Pennsylvania, and Washington.

C. Grace Courter, Director, Bureau of Appoint-

ments, wrote in the REVIEW, "October has been a busy month for the Bureau of Appointments. One hospital in California, four in Ohio, two in Pennsylvania, one in Virginia, one in Michigan and one in Maine have written about vacancies. Ten in one month; isn't that great? Forty-four members were recommended—results unknown.

"During the latter part of October letters were sent to all members—27 in number—in the active file, asking for any changes in addresses or plans, as I do like to have the latest news about everybody, and may I remind all that suggestions will be gratefully appreciated?"

Field Visits—Executive Secretary

Sept. 20—Connecticut Chapter—at New Haven.

Sept. 23-30—American Hospital Association—and Northern District of the Ohio Chapter.

The model of a physical therapy department for a 50-bed hospital was exhibited for the first time at the annual convention of the American Hospital Association. Hospital administrators and architects showed considerable interest in it and in the Manual "Essentials of a Hospital Department, Physical Therapy."

A dinner meeting was held to honor Mrs. Margaret Cleaveland who is leaving Cleveland to live and work in California. Sara Martz, Chairman of the Northern District, presented Mrs. Cleaveland with a silver serving dish on behalf of the members.

Plans for the 1950 Conference were discussed. The Northern District is going to work in earnest to make 1950 the best yet.

Sept. 30—Southern Indiana Chapter—Indianapolis.

Oct. 4—Northern Indiana Chapter.

The by-laws are written, and it will soon be approved as the 50th chapter of the Association.

Polio Recruitment

The following memorandum was sent to all Chapter Presidents on September 20, 1949, from the National Office.

We are deeply appreciative of the help you have been to this office during the recent polio emergency. As you know our problems are not over as the convalescent load will continue to be heavy for some time. This is going to require careful planning if we are to utilize our limited personnel to the best advantage.

We recognize that all patients needing physical therapy in the community must be considered and that the convalescent polio does not need the concentrated personal attention of the physical therapist that the acute and subacute case does. Many of you have been cooperating with your local National Foundation for Infantile Paralysis committees and have been of great help to them. The need now for cooperative planning is even greater. Our small pool of available physical therapists are now on emergency assignments from three to six months. Some of these will begin to terminate very soon. We feel that after a hospital has had six months of emergency help (paid for by a private agency) and that if their convalescent load is to be increased beyond the capacity of their regular staff, permanent employment only should be considered. We do not plan to assign emergency help for convalescent care.

This is what you can do to help:

1. Evaluation of the need.

   We have found that many polios are hospitalized longer than absolutely necessary. Could not more be discharged to the home and be seen in out-patient clinics at regular intervals? Most parents are vitally interested in the recovery of their children and will cooperate in a home treatment program.

2. Point out to the polio planning committee the resources available in the community for convalescent care.

   If they appear inadequate, have suggestions for the development of treatment centers. A room in the health department, in a school. Equipment should not be a problem. Stairs, ramps, tables, parallel bars are easily made. If additional physical therapists are needed, try to convince the recruited physical therapist to accept a permanent position and that your community is a good place in which to work and live.

3. Do not forget that in every state there is a crippled children's commission. Many of them have physical therapists on their staff. They will cooperate particularly in planning for the care of children outside of the large cities.

4. The inevitable question of costs will come up.

   As you know, the funds of the Foundation are precariously low. Many individuals have felt that they were inexhaustible.

   Hospital care is far more expensive than out-patient care. Long hospitalization is not

good psychologically for a patient and particularly a child.

In many hospitals the per diem cost is $15 to $20 a day which is paid by the Foundation. In addition, hospitals have been provided with the services of extra physical therapists, nurses and war aids. If a hospital says it cannot afford to hire a physical therapist, then ask questions about costs. Hospital administrators of voluntary hospitals have stated that physical therapy departments are *income-producing*.

For example, if there were 80 polios treated once a week in the out-patient department and the prevailing rate in your community per treatment was $3.00 or even $2.00, the income to the agency or hospital would be a maximum $240 a week or minimum $160.

80 cases is used as an example of an average load. It might be more or slightly less. Therefore the income received per month from out-patient care would more than pay the salary of a physical therapist as well as cover other costs.

The Foundation has always indicated its willingness to pay for those costs which the patient cannot meet.

We will be getting requests for extension of physical therapy emergency services. It is our conviction that convalescent care does not constitute an emergency. We therefore will advise that a critical review be made of case loads and that if the convalescent load is constant and high, permanent placement is indicated.

Many physicians are not aware of the shortage of physical therapists. Help explain the situation to them. Enlist their support in working out convalescent care programs which will permit more economical use of physical therapy personnel.

We will be in touch with you as requests come in for help. We will appreciate your objective opinion of the needs in your area and your suggestions as to how they can best be met.

Committee on Education

On September 28, 1949, a memorandum was sent out by Dorothy Baethke, Chairman of the Committee on Education, to all Chapter Education Chairmen outlining plans for the year and giving suggestions for activities of educational interest.

An emphasis has once more been placed on Vocational Guidance. Chapter Education Chairmen have an important role in this phase of work and in the circulation of information to prospective students.

Constructive suggestions for an Educational program at Chapter meetings included an outline for instructional meetings, "live demonstrations," seminars, and organized study courses as well as a reminder of specialized graduate courses as announced in the March 1949 issue of the REVIEW.

Detailed suggestions for educational projects will be found in the memorandum.

Membership News

Personals

• Miss Mary Haskell has recently returned from a field trip as Polio Consultant and reports that she was happy to have the opportunity to meet physical therapists and discuss their problems with them in the twenty-nine hospitals visited in five states.

Aside from business, Miss Haskell tells us that the physical therapists provided social opportunities ranging from barbecues to sight-seeing tours and private transportation.

More about the problems probably will be forthcoming, but one thing that was notably emphasized during her trip was the responsibility that physical therapists have in leading the way toward the establishment of higher standards of physical therapy. This applies particularly to developing closer relations and better understanding with medical and nursing services.

Miss Haskell reports that physical therapists are working against great obstacles and that in polio epidemic areas the average patient load per physical therapist must be nearly twenty.

• Jane Carlin, Educational Secretary, joined the National Office staff on September 19th.

• The reprint, "Suggestions for Prospective Students," is being revised and soon will be available in a new eye-catching format.

• Gonzales Warm Springs Foundation, Gonzales, Texas, reports that fifteen mothers (all in their twenties) were admitted to the Foundation during the polio epidemic. Four of the mothers treated there gave birth to normal babies shortly after or during the acute polio attack.

Marriages:

Lt. Ada Belle Armstrong is now Mrs. W. P. Barrett of Fort Riley, Kansas.

Barbara K. Barton of West Haven, Conn., is now Mrs. Edwin R. Lindsey of Des Moines, Iowa.

Jean H. Bonn is now Mrs. Stanley Vogel of Hartford, Conn.

Charlotte Crimmins of Los Alamos, N. Mexico, is now Mrs. Charlotte C. Pandt of Minneapolis, Minnesota.

Sarah Fithian of Bridgeton, New Jersey, is now Mrs. J. H. Livingston of Schenectady, New York.

Shirley Gale is now Mrs. Shirley G. Cousens of Revere, Massachusetts.

Patricia Gibson is now Mrs. Patricia G. Stewart of Jacksonville, Florida.

Lt. Anna Hastings is now Lt. Anna H. Stephens of Wichita Falls, Texas.

Nancy Hemphill is now Mrs. Lloyd Pitsch of San Francisco, California

Mary Anne Jennings of Harrisburg, Pennsylvania, is now Mrs. John H. Krieger of Camp Hill, Pennsylvania.

Patricia Lyga of Milwaukee, Wisconsin, is now Mrs. C. N. Geraldson of Madison, Wisconsin.

M. Virginia McGrath of Hartford, Connecticut, is now Mrs. Eugene E. Reynolds of East Windsor Hill, Connecticut.

Anne D. Mitchell of West Haverstraw, New York, is now Mrs. Anne M. Larsen of Milwaukee, Wisconsin.

Gladys Mae Morris of Newark, New Jersey, is now Mrs. Gladys M. Jantz of Walla Walla, Washington.

Alyce Oleson is now Mrs. Alyce O. Bowman of Oakland, California.

Nancy Robb of Raleigh, North Carolina, is now Mrs. Joseph Redding of Wilmington, North Carolina.

Susan Robertson is now Mrs. Susan R. Haywood of Sea Bright, New Jersey.

Jeanne Salamon of Los Angeles, California, is now Mrs. Jeanne S. Geren of Chicago, Illinois.

Florence Slater of Santa Monica, California, is now Mrs. Florence S. McIllice of West Los Angeles, California.

Lt. Kate Young of the U. S. Navy is now Mrs. Kate Y. Bunten of Springfield Gardens, Long Island, New York.

Clare Zanger is now Mrs. Herbert G. Tearse of San Jose, California.

New Members

The following are newly accepted members of the American Physical Therapy Association:

Marion V. Billings
Mrs. Lorraine Bronston
Irene Bush
Walter Goodman
Audrey D. Hardy
Irene P. Kazmierowicz
Mrs. Bette M. Lanfranchi
Emily C. Mays
Regina McGeorge
Salvatori Morrocco
Hazel A. Rider
Vida A. Skellie

• Recent graduates and former student members of the following schools:

Albany Hospital:

Martha Veitch

Baruch Center of Physical Medicine, Medical College of Virginia:

Michael Andreosky
Martin J. Avignon, Jr.
Mrs. Miriam Avignon
Louis E. Baker
Warren Crouch, Jr.
John Dichkewich
Lois M. Elliott
Helen C. Farrell
Gilbert N. Fine
Gloria J. Fitzpatrick
M. Grant Foster
Sara F. Foster
Margaret L. Galambos
Ruth Golson
Ewing Guthrie
Elinor L. Guza
Charles M. Haag
Martha J. Henderson
Lester Himmelreich, Jr.
Mrs. Anne W. Holland
Rebecca S. Holton
Amalia H. Krajewska
Charles Leedecke
Imogene W. Lineburg
William H. Lippitt
Viola McCormick
Mary F. McDowell
Frederick P. Miller
Merton E. Miller
Magadalena Oanea
Andrew A. Orsini
John O'Toole
William D. Otterman
Theresa A. Pintado
Kathleen Rector
Catherine P. Rhoades
Gordon G. Robertson
J. Ellen Russell
Mazie E. Sergeant
Joseph T. Strunk
Barbara E. Teasdale
Alice E. Williams
Winifred Williams

Columbia University:

Hyman Dervitz
Alice Jensen

New York University:

Francis Cantrell
Edna Knowlton

Stanford University:

Virginia Koenig

University of California:

Margaret Bertolli
Yvonne Bordegaray
Ernestine Crestfield
Marguerite G. Dilley
C. Juanita Erickson
Bonnie J. Fleming
Alice V. Goodman
Loraine Ives
Jeanne M. Jouvenal
Harry G. Knecht
Margaret J. McDaniel
Ernest Lee Mann, Jr.
Kay Murota
Mrs. Sally-lee Norton
Harold P. Pfluger
Ruth Ann Tolf

University of Minnesota:

Priscilla M. Brank
Geraldine E. Finger

University of Pennsylvania:

Duane C. Behlen
Mrs. Pauline F. Bowen
Helen L. Buch
Helen M. Dobbin
Mrs. Jane Hanrahan
Marie Harcharufka
Melvin G. Jaspan
Mrs. Geraldine Johnston
Atha I. Lighty
(Mr.) Luz Maria Lopetegui
Marie Mikovich
Edward J. Miller
Anna Mae Mumma
Russell L. Neiswender
Grace K. Porter
Jewel Radford
Clarence W. Rudegeair
Archibald Simons
Elizabeth A. Tachovsky
Lucille Thomas
Erle L. Williams
William A. Winneberger
Sally A. Wooleyhan

Correction: The names listed in the October issue of the REVIEW from Stanford University and Walter Reed General Hospital were *student members* and *not* recent graduates or members.

School Notes

One Hundred Per Centers

• The members of the 1949 Northwestern graduating class are 100 per cent American Physical Therapy Association members. All necessary papers were processed in time for American Physical Therapy Association pins to be on hand for the graduation exercises given for the 28th class of physical therapy students at Northwestern University Medical School which were held at Thorne Hall, September 30, 1949. Dr. Emil D. W. Hauser, Associate Professor of Bone and Joint Surgery at Northwestern University Medical School, gave the address to the graduating class. Dr. Stafford L. Osborne, Professor of Physical Medicine at Northwestern University Medical School, presented the certificates to the class. American Physical Therapy Association pins given by the Department of Physical Medicine were presented to the class by Miss Viola Bryson, President of the Illinois Chapter of the Association. All members of the graduating class had been student members of the Illinois Chapter and were welcomed by Miss Bryson as active members of the American Physical Therapy Association. Immediately following the exercises, the Northwestern University Physical Therapy Alumni Association gave a dinner in honor of the class.

• The School of Physical Therapy, Graduate Hospital of the University of Pennsylvania, also belongs in the 100 per cent ranks. At their graduation Dorothy Baethke, Technical Director, presented them with American Physical Therapy Association emblems.

General News

CARE Soap Campaign

Have you heard or read of the CARE soap campaign? In cooperation with Lever Brothers, they will guarantee delivery of soap to the "millions of underpriviliged children" in Europe. In operation it is simple. Purchase two cakes of Swan soap and send the wrappers to CARE, Boston 1, Mass. For each two Swan wrappers, Lever Brothers will donate a cake of Swan for overseas distribution by CARE.

Coming Meetings

Date	*Organization*	*Place*
June 25-30, 1950	American Physical Therapy Association	Hotel Statler, Cleveland, Ohio

Index to Current Literature

Arthritis and Rheumatism

Effects of Cortisone Acetate on Rheumatoid Arthritis. Edward W. Boland and Nathan E. Headley. Journal of the American Medical Association, October 1, 1949.

Braces

Use of Braces in Hemiplegia Should Include Graded Program of Balance and Gait Training—Orthopedic Appliances in Hemiplegia. Harold Dinken. Braces Today, October 1949.

Cerebral Palsy

Cerebral Palsy—A Public Health Problem. Eva Landsberg. Journal of American Medical Women's Association, August 1949.

Infantile Cerebral Palsy—

(1) *Some Observations on Treatment.* C. D. S. Agassiz.
(2) *Pathology and Its Bearing on Treatment.* W. F. Dunham.
(3) *The Basis of Treatment.* Eirene Collis.
(4) *Infantile Cerebral Palsy in Norway.* Norwegian Physiotherapy Congress.

All four articles (above) from Journal of Chartered Society of Physiotherapy. September 1949.

Dermatology

The Sun and the Skin. J. M. Hitch. North Carolina Medical Journal, June 1949.

Exercise

The Effect of Postural and Exercise Components on the Heart Rate During a Brief Step Test. Journal of Physiology, May 15, 1949.

Vitamin B_{12} and Coordination Exercises for Combined Degeneration of the Spinal Cord in Pernicious Anemia. Byron E. Hall, Frank H. Krusen and Henry W. Woltman. Journal of the American Medical Association, September 24, 1949.

Geriatrics

Centenarians: The Syndrome of Normal Senility. Ivan Basylewicz. Rhode Island Medical Journal, June 1949.

Heat and Cold

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The Oscillographic Recording and Quantitative Definition of Functional Disabilities of Human Locomotion. R. Plato Schwartz and Arthur L. Heath. Archives of Physical Medicine, September 1949.

The Influence of Mecholyl and Histamine Ion Transfer on Recovery From Fatigue. F. A. Hellebrandt, Ellen Neall Duvall, Sara Jane Houtz, Annie M. Parrish and Helen V. Skowlund. Archives of Physical Medicine, September 1949.

Thermal Gradients in Man: Comparison of Temperatures in the Femoral Artery and Femoral Vein with Rectal Temperatures. Ludwig W. Eichna. Archives of Physical Medicine, September 1949.

The Current Status of Drug Therapy. Meyer A. Perlstein. The Crippled Child, July-August 1949.

Annual Congress of Physiotherapists—An Expanding Profession. British Medical Journal, September 24, 1949.

Structure and Function of Muscle. Ruth E. M. Bowden. British Medical Journal, September 10, 1949.

Nervous and Mental Diseases and Injuries

Antibiotics and the Prevention of Postoperative Pulmonary Complications. Stanley O. Hoerr. Ohio State Medical Journal, March 1949.

Electronarcosis. William Karliner. Medical Record, August 1949.

Physiology

A Simplified Method for the Determination of Circulating Red-Cell Volume with Radioactive Phosphorus. E. B. Reeve and N. Veall. Journal of Physiology, March 1, 1949.

Peripheral Vascular Diseases

The Study of Peripheral Vascular Diseases with Radioactive Isotopes: Part II. F. W. Cooper, Jr., Daniel C. Elkin, Patrick C. Shea, Jr., and E. W. Dennis. Surgery, Gynecology and Obstetrics, June 1949.

Physical Medicine in Peripheral Vascular Diseases. William Bierman. Journal of the American Medical Association, October 1, 1949.

Iontophoresis in the Treatment of Peripheral Vascular Disease. H. S. Pemberton and C. Watson. British Medical Journal, September 17, 1949.

Exhibits Available

There are three exhibits in the National Office which are available for loan to the chapters for showing at local or state meetings of allied organizations.

Exhibit 1 has been shown successfully at meetings of the American Hospital Association, American Medical Association, American Academy of Orthopedic Surgeons, International Poliomyelitis Conference and the 1948 American Physical Therapy Association Conference. The background is gray—terra cotta lettering and the pictures are in Kodacolor. It stands on its own packing box which has a blue velour cover. It is 8 feet long and requires 10 feet of back wall space. It is easy to assemble. Two people can put it up in about 10 minutes.

Exhibit 2 consists of two posters showing bed exercises and functional activities, and a large

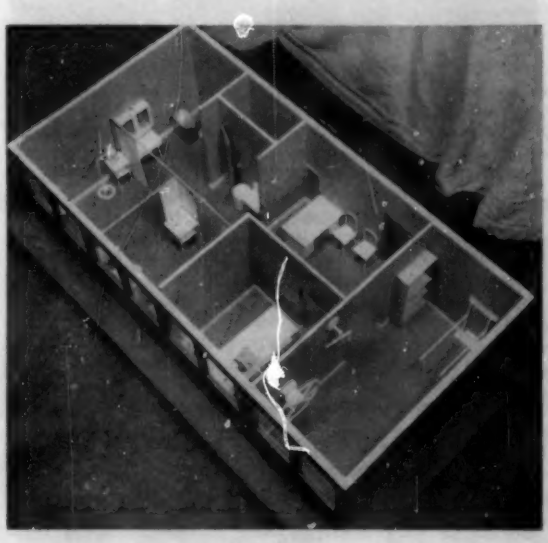

Exhibit 3.

wooden seal of the Association. The view box contains Kodachrome slides illustrating physical therapy education and examples of physical therapy procedures. The stand on which the view box is placed is the packing box in which it all fits. A blue velour cover is used to cover the box. The exhibit requires 8 feet of back wall space. Additional posters are to be made for side walls.

Exhibit 3 has just been shown at the Cleveland meeting of the American Hospital Association. It is a model of the 50-bed hospital, complete with equipment manufactured to scale, as described and illustrated in the manual, "Essentials of a Hospital Department—Physical Therapy." The interior is light green and the outside a wall of brick red color. It stands on its own packing case which has a gray velour cover. It is very easy to assemble. Two people can do it in 10 minutes or less.

These exhibits may be obtained by writing to the National Office of the American Physical Therapy Association. The National Office will prepay the express charges for a chapter and the chapter is expected to prepay the express back to New York.

Available Sets of Kodachrome Slides—2x2

1. Course Content—for vocational guidance talks to prospective students.
2. Physical Therapy Procedures—for vocational guidance talks and for allied professional meetings.
3. Underwater Therapy—the technics of underwater therapy are described. These slides were made at the Orthopedic Hospital, Los Angeles, under the direction of Susan G. Roen and Charlotte Anderson. They are of interest primarily to physical therapists and physical therapy students.
4. Doctor Storms' series illustrating physical and occupational therapy at the Convalescent Center of the Workmen's Compensation Board, Malton, Ontario.

Special sets of slides will be made up from the above series upon request.

A script is enclosed with each set of slides.

The National Office will pay postage one way to chapters and to members.

Write to the National Office, American Physical Therapy Association, 1790 Broadway, New York 19, N. Y.

Abstracts

John S. Coulter, M.D.

The Basic Treatment of Rheumatoid Arthritis

Thomas E. Weiss, M.D. In NEW ORLEANS MEDICAL AND SURGICAL JOURNAL, 101:10:496, April 1949.

Although it is generally recognized that rest is of value in treating rheumatoid arthritis, Pemberton has estimated that only about 11 per cent of patients are properly instructed as to the value of rest. Since the disease is a systemic one, the ideal would be absolute bed rest for all patients with active rheumatoid arthritis. As this is often not feasible, it is probably safe to compromise in the mild cases in which there is not involvement of any weight-bearing joints, and in which there is absence of systemic symptoms, such as fatigue or fever.

Because of pain caused by motion some patients with rheumatoid arthritis assume the most comfortable position and seldom move. Consequently, fixation of joints in these positions results in pronounced loss of flexibility of the joints.

With stress placed on resting it may be confusing to underscore the importance of exercises. Exercises are designed to retain and increase all possible articular motion, and to prevent deformities and muscular atrophy. In the absence of weight-bearing these movements apply little pressure to inflamed articular surfaces and tend to prevent fibrous bands from forming in the joint, so that fixation or ankylosis is prevented.

It is best to outline a set of written exercises, whereby each joint, be it involved or not, is put through its complete range of motion one to ten times daily. The exercises are to be gradually increased in number, and should fatigue ensue or increase in pain occur, the number of repetitions must be reduced, and then built up slowly.

The services of a trained physical therapist can be most helpful in carrying out this phase of treatment, and early in treatment it is wise to have the patient do the exercises under trained supervision. Underwater exercises often are helpful in early stages, and such facilities, when available, can be used to advantage.

Physical medicine plays a large and important role in the basic treatment of rheumatoid arthritis. The application of heat, be it moist, dry or radiant, to a painful joint usually relieves the discomfort temporarily, and in the presence of limitation of motion often permits greater mobility. Hot packs, which should be allowed to remain on for twenty or thirty minutes, require the attention of trained attendants, and often when multiple joints are involved, the patient may find these uncomfortable. Often hot immersion baths of the involved part can be easily carried out and these are equally beneficial. Infra-red lamps afford a ready source of heat, and can be used safely for a period of twenty to thirty minutes.

For patients who are not debilitated, hot tub baths often afford considerable relief and provide a good method for treating involvement of multiple joints. Tub baths of 100 to 104 F. should not last longer than twenty to twenty-five minutes, and when first instituted they may cause the patient to become weak or unduly fatigued. An attendant should assist with hot baths.

Hot paraffin baths can be used for painful hands or feet, and although there is no evidence to prove that

this type of body heating is more beneficial, some patients obtain longer relief. These baths can be taken at home at relatively little expense.

Occasionally the application of heat to an acutely inflamed joint may increase the pain. In such cases, cold applications can be tried temporarily. Should this also prove aggravating, temporary immobilization and analgesics usually are adequate.

There must be guarded use of massage. The physical therapist should have a gentle hand and confine the massage to the muscle groups, avoiding the involved joints. Painful, tender or swollen joints must not be traumatized by massage. Muscle bulk can be saved or restored only with proper exercise.

The chronicity of the illness and its crippling tendency usually cause restlessness and anxiety even in the most stalwart patients. Such emotional burdens continually call for realistic reassurance and sensible optimism, which must be ever present in the attendant's approach to the patient.

A basic outline of treatment of rheumatoid arthritis should include: (1) thorough understanding of the disease by the patient, (2) rest, (3) exercise, (4) plaster splinting, (5) analgesics, (6) physical therapy other than exercises, (7) dietary management, (8) treatment of the anemia, (9) psychotherapy, (10) orthopedic appliance other than splinting, and (11) orthopedic corrections. These measures, carried out in an energetic manner, usually result in encouraging improvement and afford the patient full benefit of therapy. The use of such an active basic program helps prevent a feeling of helplessness and discouragement on the part of the physician, an attitude which could so easily infect the afflicted patient.

Efficacy of Peripheral-Acting Drugs in the Treatment of Experimental Spasticity

Norma M. Hajek, Ph.D., and H. M. Hines, Ph.D. In ARCHIVES OF PHYSICAL MEDICINE, 30:8:517, August 1949.

This report is concerned with a quantitative study of the effects of the peripheral-acting drugs, neostigmine, curare (Intocostrin and d-tubocurarine) and ammonium chloride upon experimentally produced spasticity in laboratory animals.

The maximal amount of relaxation resulting from the repeated administration of large doses of curare and neostigmine was insufficient to allow spastic muscles to regain their normal resting length. The extent and duration of the relaxation were insufficient to protect the muscles from the injurious effects of prolonged shortening. The absence of any selective "lissive" action of these drugs on spastic muscles made it necessary to employ near paralytic doses to bring about an appreciable degree of relaxation. These studies point to the futility of employing this drug alone for the prevention of the damage to skeletal muscle which results from a state of prolonged shortening but do not point to any contraindication for their use in the facilitation of mobility and coordination in this type of neuromuscular disorder.

Studies were made on the efficacy of curare (d-tubocurarine and Intocostrin), neostigmine and ammonium chloride in lessening the muscle damage which occurs in a condition of prolonged muscle shortening produced experimentally in the gastrocnemius muscle group of albino rats by the injection of tetanus toxin. It was concluded from the measurements of muscle weight and strength of the spastic muscles, both treated and untreated controls, that of the drugs investigated, curare and neostigmine produced some degree of relaxation but were not alone able to bring about sufficient elongation of the shortened muscle to prevent or lessen the atrophy and loss of strength which occur in skeletal muscle during a state of prolonged shortening. Ammonium chloride did not alter the progress of the spasticity or the conditions of atrophy and strength loss.

The Influence of Atropine on the Effects of Mecholyl Ion Transfer on the Peripheral Circulation in Man

Jerome W. Gersten, M.D., Khalil G. Wakim, M.D., Ph.D., Gordon M. Martin, M.D., and Frank H. Krusen, M.D. In ARCHIVES OF PHYSICAL MEDICINE, 30:8:501, August 1949.

The effects on the peripheral blood flow of atropine injected intravenously, of mecholyl ion transfer and of mecholyl ion transfer preceded by an injection of atropine were studied on 23 normal human subjects, on whom eighty-one observations were made. The blood flow in the extremities was determined by means of the venous occlusion plethysmograph with the compensating spirometer recorder, and the heart rate and blood pressure were determined by the usual clinical means.

Mecholyl ion transfer caused cardiac acceleration. The amount of acceleration produced by mecholyl was greater with the small anode and higher current than with the large anode and small current. Atropine consistently produced slowing of the heart whether injected alone or in combination with mecholyl ion transfer.

Mecholyl ion transfer produced significant increases in blood flow in the treated extremity. Greater increases in flow were produced with the large anode (57 square inches) than with the small one (19.7 square inches). The magnitude of increase in blood flow produced in the treated extremity by mecholyl ion transfer alone was much greater than when 1/200 grain (0.00032 Gm.) of atropine sulfate was injected intravenously five minutes before ion transfer. This inhibitory action of atropine on the increment in blood flow produced by mecholyl provides further evidence for the presence of cholinergic vasodilators in the extremities.

The Short First Metatarsal: Its Incidence and Clinical Significance

Robert I. Harris, M.B., and Thomas Beath, M.D. In THE JOURNAL OF BONE AND JOINT SURGERY, 31-A:3:553, July 1949.

Measurable shortness of the first metatarsal relative to the second does not necessarily mean that it cannot as readily reach the ground and that less weight will be transmitted through this bone. The obliquity of the metatarsals in relation to the ground means that all can share equally in weight-bearing, provided the longer metatarsals are on a higher plane than the shorter. This normally will be the case if the metatarsal arch exists. It is then possible for the second and third metatarsals to extend farther forward than the first before reaching the ground, because they are at the apex of the metatarsal arch.

In any case, the efficient use of the foot to support the weight of the body and to propel it in walking and running is not entirely dependent upon perfection of structure, even though this is of importance. In feet which are not perfect in their structure, compensatory mechanisms of considerable efficiency develop, which tend to offset the ill effects that might arise as the result of deviation from standard structure. In the case of the first metatarsal segment, the flexor hallucis longus, as has already been indicated, can provide the necessary supplement to function. After all, foot function is dynamic as well as static.

The Mechanism of the Structural Changes in Scoliosis

Alvin M. Arkin, M.D. In THE JOURNAL OF BONE AND JOINT SURGERY, 31-A:3:519, July 1949.

It has been shown how a functional, nonwedged curve can progress into a fixed structural scoliosis. Although a discussion of the etiology of the preceding functional curve is not within the scope of this paper, it may be assumed that the initiating cause of the functional curve, in some cases at least, may continue to contribute to the structural scoliosis which follows.

Whatever the cause of the functional curve, as soon as it has produced a deviation exceeding a certain critical value, the factors described in this paper come into play and the spine has embarked on the course of epiphyseal compression and structural scoliosis. It is possible that such factors as rapidity of growth, heredity, and sex, and pathological processes, such as rickets, may modify the quantitative relationship between pressure and growth arrest.

Obviously the best treatment is prevention, by correcting postural deviations, whether in the anteroposterior or the lateral plane, or both, before they progress to structural changes. In a severe curve, plaster jackets and braces cannot completely relieve the epiphysis of the pressure induced by the superincumbent weight, tremendously multiplied as it is by the mechanical arrangement which obtains. Recumbency, of course, removes the superincumbent weight completely. A combination of these two methods (jackets plus recumbency) would seem to offer the better prospect of successful conservative treatment.

(1) The vertebral deformation of structural scoliosis can be explained by an asymmetrical disturbance of epiphyseal growth by pressure.

(2) "Vertebral epiphysitis" is a related lesion.

A Walking Aid for Spastic Children

Philip Wrightson, M.A., M.B., F.R.C.S.Ed. In THE BRITISH JOURNAL OF PHYSICAL MEDICINE, 12:3:68, May-June 1949.

A device is described which reduces the effective weight of a patient during walking exercises. It is of most value in the early walking practice of spastic children. It is stressed that it is an aid to, and not a substitute for, the proper training in movement which is the fundamental therapy for these children. The device also can be used in other conditions in which there is weakness or incoordination of the legs, and for mobilizing otherwise bedridden patients.

The Current Status of Drug Therapy

Meyer A. Perlstein, M.D., Secretary of the American Academy of Cerebral Palsy. In THE CRIPPLED CHILD, 27:2:8, July-August 1949.

In evaluating the current status of drug therapy for cerebral palsy, it should be emphasized that the determination of the therapeutic efficacy of any drug for this disorder is difficult. The effect of suggestion on the patient's subjective symptoms, the possible coincidence of spontaneous improvement or relapse with the initiation or cessation of treatment, the intrusion of masked but important extraneous influences on the cause of the illness must all be considered if the evaluation is to be valid. All of these factors must be considered, especially treatment of cerebral palsy.

In the treatment of cerebral palsy, no medication is a substitute for training. Drug therapy serves only as an aid to special treatment, specifically directed toward the training of the patient.

Electromyographic Diagnosis of Lower Motor Neuron Disease

James G. Golseth, M.D., and O. Leonard Huddleston, M.D., Ph.D. In ARCHIVES OF PHYSICAL MEDICINE, 30:8:495, August 1949.

In this communication the authors have attempted to present very briefly the subject of electromyographic diagnosis of lower motor neuron disease. Electromyography does not and never will replace a careful neurologic examination. Since, however, electromyographic diagnosis is based on fundamental physiologic principles, it is the authors' belief that additional information concerning neuromuscular disorders frequently can be obtained when electromyography is done in conjunction with a careful neurologic examination.

Colonic Irrigation

C. O. Molander, M.D. In ARCHIVES OF PHYSICAL MEDICINE, 30:8:523, August 1949.

Research in this field has been meager, and this fact accounts for the controversial nature of the subject. Moreover, the indiscriminate use of colonic irrigations by inexperienced or irresponsible operators, without regard to its limited indications and numerous contraindications, has added ammunition to the controversy, and many medical men in the past have warned of its potential dangers, such as hemorrhage due to trauma, perforation of bowel or diverticulum, irritation, habit formation, torn rectal valves due to trauma, abdominal distention and a sense of weakness.

Fifteen years of experience has taught us that there is a place for colonic irrigation in a large general hospital, but the indications for its use are definitely limited and its contraindications are numerous.

Before giving an irrigation, the physiatrist must understand the indications, the contraindications, the technics involved and the purpose of the irrigation. He should be familiar with the diagnosis and history of the case, and he should make an examination to detect any possible contraindication. The person giving the irrigation should be well experienced in correct irrigation procedures, and the apparatus should be of the pressure and vacuum gauge variety.

Venous Thrombo-Embolic Phenomena: Their Absence in Paraplegic and Tetraplegic Patients

Albert W. Cook, Lt. (j.g.) M.C., U.S.N.R., and Harold A. Lyons, Comdr., M.C., U.S.N. In THE AMERICAN JOURNAL OF THE MEDICAL SCIENCES, 218:2:155, August 1949.

The observation is made that a group of 45 paralyzed veterans represent a total of 115-man-years in which their lower extremities have not been moved voluntarily. They have been subjected to approximately 175 surgical procedures. Up to the present there has been no death in this group from a pulmonary embolus.

Data concerning the coagulation mechanism of the blood of these patients are presented and shown not to be consistent with the idea that the blood of these patients clots subnormally. Other factors producing injury to the vein walls in the lower extremities and favoring venous stasis in these limbs are reviewed.

From the data obtained we believe that the following conclusions are warranted: (1) The young average age of the patients in this group accounts for the absence of fatal pulmonary embolizations; (2) The age of bed-rest patients is one of the chief determinants of the occurrence of lethal thrombo-embolic phenomena; (3) The basis for the influence of advancing age on the incidence of thrombo-embolisms may be, in part, the concomitant decrease in the human source of heparin, the mast cells.

Physical Medicine in Amputations

Fred W. Hark, M.D., Hines, Ill. In ARCHIVES OF PHYSICAL MEDICINE, 30:8:511, August 1949.

A stump should lie flat on the bed; pillows to flex the hip or knee are not allowed. As soon as the stitches are out, the patient should be encouraged to move the amputation stump to prevent the muscles from becoming adherent to the skin. As soon as the wound is healed, one also begins to model and shrink the stump. It must be made to take the shape of a cone. There are two schools of thought on the method of procedure. One school feels that the stump can best be modeled and shrunk with a bandage. The other feels that the stump can best be modeled by use of an artificial limb or pylon.

Hand in hand with the shrinking and toughening of the stump come the preprosthetic exercises. They are given to increase muscle strength of the amputated extremity and prevent contractures and also to maintain general muscle tone and posture. In a below the knee amputation, the knee tends to go into flexion. The aim is to develop the quadriceps. The hamstrings do not maintain their importance when an artificial limb is used. Gravity is depended upon for extending the knee of an artificial limb. The stump of a thigh amputation goes into flexion and abduction. In fact, when a person with a thigh amputation lies prone, he flexes and abducts the stump when he intends to extend it. Should this flexion-abduction tendency be allowed to persist, the limb maker would build the bucket at an incline and the patient would stand with a lateral pelvic tilt. Should there be a flexion contracture, the patient would have to stand in a position of lordosis. So it becomes obvious why stump muscles should be strengthened and coordinated and any contractures corrected should they exist.

There are various ways of giving exercises for the thigh. In general, exercises should be done in functional surroundings.

When the patient is given his prosthesis, three things should be stressed: balance, swinging the limb forward without abducting it, and extending the artificial knee at the end to the forward swing.

Once the principles of gait have been learned, it takes practice to gain a certain momentum of swing to the limb to gain rhythm and stride. That should be the goal. One should not be satisfied with letting his patients just get around.

The Influence of Mecholyl and Histamine Ion Transfer on Recovery from Fatigue

F. A. Hellebrandt, M.D., Ellen Neall Duvall, Ph.D., Sara Jane Houtz, B.S., Annie M. Parrish, B.S., and Helen V. Skowlund, M.S., Richmond, Va. In ARCHIVES OF PHYSICAL MEDICINE, 30:9:578, September 1949.

Three hundred and ten ergographic experiments, designed to test the influence of mecholyl and histamine ion transfer on recovery from fatigue, were performed on 9 trained and 40 untrained subjects. Double periods of exhausting repetitive voluntary work were performed on the finger, radio-ulnar and wrist ergographs. Experimental or control procedures were introduced during the one-half hour period which intervened between the first and second "all-out" effort. The evidence presented supports the following conclusions:

(1) The administration of mecholyl chloride by ion transfer has a significantly greater effect upon recovery from experimentally induced fatigue than histamine or sodium chloride by ion transfer or rest.

(2) The magnitude of the recuperative effect of mecholyl approaches but does not reach unequivocal significance.

(3) The subjective fatigue-alleviating effects purported to be produced by the clinical administration of vasodilating drugs by ion transfer were confirmed on normal subjects.

(4) The volitional outgoing motor impulses of subjects willing to make a maximal "all-out" effort are not sufficiently affected by a diminuation in inhibitory nociceptive impulses as a result of histamine or mecholyl ion transfer to augment greatly the work output.

Conservative Treatment of Functional Disorders of the Feet in the Adolescent and Adult

R. Plato Schwartz, M.D., and Arthur L. Heath, B.S. In JOURNAL OF BONE AND JOINT SURGERY, 31-A:3:501, July 1949.

Pronation in childhood is an expression of deficiency in the function of the intrinsic osteo-articular structures of the foot. By application of the principles of Wolff's law, pronation may be greatly improved or entirely eliminated by the time the child is sixteen. In both children and adults, the preservation of function of the intrinsic and extrinsic structures essential to normal stance and locomotion is required for maximum efficiency and greatest freedom from discomfort. The shoes in which feet must work constitute the major cause of these problems common to successive generations. Excellence in quality of footwear cannot assure that the feet will be free from functional impairment. The structural and functional relationship between foot and shoe is determined by the last over which the shoe is made. The design of lasts has been determined by a combination of empirical influences, without benefit of measurements necessary for the preservation of function of the intrinsic and extrinsic structures essential to efficiency and comfort in stance and locomotion.

Full understanding of the needs of the human foot in action awaits the further application of measurement to the study of foot dynamics. Proved principles can then replace opinion in the design of shoe lasts and in the application of therapeutic measures.

Hypertensive Heart Disease

A. L. Cooper, M.D. In KENTUCKY MEDICAL JOURNAL, 47:8:305, August 1949.

The treatment of hypertension is a source of much discouragement. The removal or correction of primary factors should have first consideration. The management should be divided into at least six categories: (1) psychotherapy, (2) rest, (3) physical therapy and x-ray, (4) diet, (5) medicines, and (6) surgery.

Psychotherapy.—There are a number of things which the physician does well to remember in treating a person with high blood pressure. An effort should be made to readjust his life, so that unnecessary strain on the heart and blood vessels does not occur. Irritability, anxiety, fear, resentment and an alternate aggression and dependence are typical emotional attitudes of the hypertensive patients. They are sensitive to petty annoyances and especially personal slights, disagreements or altercations. Self recrimination for those traits is always indulged in by these patients who may revolve in a sort of emotional vicious cycle, especially when they have been told that emotionality aggravates the blood pressure. For the physician not trained in psychiatry the best treatment for these disturbances seems to be the use of reassurance, sympathy, and encouragement.

Rest.—At least nine hours in bed when possible and the patient should be advised to try to cultivate a habit of resting one hour every morning and two hours in the afternoon.

Physical therapy.—Physical therapy at the present time has a very limited place in the treatment of hypertension.

The Medical Treatment of Cerebrovascular Accidents

Frank K. Sewell, M.D. In KENTUCKY MEDICAL JOURNAL, 47:7:265, July 1949.

A great deal of the prognosis depends upon the patient. The better he has been able to adjust in the past the better the prognosis will be. The majority of patients will survive the stroke. Strokes occurring during sleep usually improve rapidly. Paralyses mostly sensory are more likely to result in a useless limb. The lower extremities return to function better than the upper. Paralysis with stereognosis preserved is a good omen. If pain appears it will persist and grow. If there is a hemiopsia with the paralysis, defects are likely to be severe. In general the higher the lesion the more grave the prognosis. To the patient the physician should be optimistic for many recover completely and are able to resume work. These old people have a fear of being a nuisance around the house and a little overly optimistic encouragement often surprises the physician in its results.

Absolute bedrest is essential. The patient should be turned frequently to prevent hypostasis; postural drainage with aspiration of mucus is important. Well-meaning friends and neighbors should be excluded. The patient's questions should be answered as soothingly as possible. Gentle massage of the limbs with passive motion of the joints should be carried out as soon as the patient regains consciousness.

As soon as voluntary motion returns the patients should be put through systematic exercise several times each day; warm baths, diathermy and massage may help. The length of time he is kept in bed depends upon the severity of the attack. Recovery will not be complete for about one year. During this time the patient must be reeducated in a way of life suitable to his individual capacities.

It is important to differentiate between thrombosis, hemorrhage, and embolism in order that the most satisfactory treatment may be followed. The important periods in treating cerebral accidents are:

(1) The stage of shock. The disease is yet advancing and the end is not in sight. During this period treat shock.

(2) The period when the patient reacts and realizes the extent of his injury. Psychotherapy is invaluable at this stage.

(3) The period of recovery during which supportive psychotherapy must be given.

One of the most important recent advances in geriatric medicine is the recognition of the condition of multiple small strokes.

Therapeutic Problems Encountered in Acute Poliomyelitis

Robert B. Lawson, M.D. In MINNESOTA MEDICINE, 32:7:693, July 1949.

Two main facets of acute and convalescent care in poliomyelitis patients should be emphasized. Tremendous strides have been made in improved technics of muscle reeducation and the rehabilitation of paralyzed patients in the convalescent stage. However, most of this care falls into the hands of the orthopedic specialists and their able assistants, the physical therapists. The care of the acute case is the province of the original family physician, the pediatrician or internist and the nose and throat specialist. By the cooperation of this latter team and the continual search for improved technics we can do much to reduce both the mortality and the complications of the acute case.

Disablement

Editorial. In THE BRITISH JOURNAL OF PHYSICAL MEDICINE, 12:4:85, July-August 1949.

Adverse outside factors beyond the control of the disabled are: (1) erroneous vocational guidance; (2) employment in unsuitable jobs, especially inferior jobs; (3) unsatisfactory management at their place of employment.

With a few exceptions, in a group recently studied by Wittkower, all the patients who had had amputations were in employment at the time of examination. A high proportion of men who had been skilled manual workers changed over to clerical occupations after their disablement. Their tendency to give up their skilled jobs generally was not warranted by the type of their disability. Roughly 50 per cent of the men who had lost a leg were in occupations which required long standing (for example, fitters, welders and assemblers), or walking and car-driving (for example, factory inspectors, salesmen, and roundsmen) or even heavy lifting (for example, stokers and railway porters). About 33 per cent of those who had lost an arm were in occupations which required great manual skill, for example, as fitters and welders. About 66 per cent of the maimed were satisfied with their employment. Those who were dissatisfied complained that their occupations were too strenuous, were only temporary, were too monotonous, or did not give them enough scope or chance of promotion.

Industrial Accidents and Peripheral Vascular Diseases

S. S. Samuels. In INDUSTRIAL MEDICINE, 18:133, April 1949. Abstracted in JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, 141:3:224, September 17, 1949.

Samuels calls attention to the close relation between peripheral vascular diseases and serious complications resulting from slight trauma. Many cases of leg amputations for gangrene have resulted in delayed claims for compensation. After the leg has been removed the patient may recall that the gangrene preceding the amputation was produced by some insignificant trauma. Patients with preexisting arterial insufficiency in the extremities, as in Buerger's disease or arteriosclerosis obliterans, are particularly susceptible to the development of gangrene if subjected to minimal trauma which would not be serious if the circulation were normal. The patient with preexisting arterial insufficiency in the extremities is susceptible to effects of exposure to a cold environment to a much greater degree than a person with normal circulation. Workers in butcher shops or refrigerated food compartments, as in ship storage rooms, or employees in street-cleaning departments are all candidates for the disability if the circulation in the extremities is deficient. The increasing use of electrical vibrating tools and pneumatic hammers has produced a form of Raynaud's syndrome of the fingers and hands which may cause total disability. Evidence of this condition indicates the advisability of immediate change of occupation. Many prospective employees with advanced arterial disease of the lower extremities slip through physical examination undetected in occupations where such a disease would be a serious hazard. Physicians have not been sufficiently trained in the detection of arterial disturbance. A simple test consists in having the patient, while in a recumbent position, elevate the legs to an angle of about 45 degrees. The feet are then flexed and extended rapidly at the ankle joints, and the plantar surfaces are observed. If ischemia should develop, this is evidence of organic arterial insufficiency.

Physical Medicine in a Changing Hospital World

E. M. Bluestone, M.D. In THE MODERN HOSPITAL, 73:1:49, July 1949.

The specialty of physical medicine can have no more worthy objective in its professional life than the return of the patient to social usefulness and I earnestly hope that it will succeed in convincing the profession of hospital administration, as well as the management of hospitals generally, of the justice of its cause since it is, after all, the patient's cause.

Vitamin B_{12} and Coordination Exercises for Combined Degeneration of the Spinal Cord in Pernicious Anemia

Byron E. Hall, M.D., Frank H. Krusen, M.D., and Henry W. Woltman, M.D., Rochester, Minn. In THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, 141:4:257, September 24, 1949.

Properly directed coordination exercises serve as an important motivating force in hastening recovery and rehabilitating patients who may have been disabled for some time. More than this, the exercises actually assist coordination and restore strength of muscles which may not have functioned properly since the neurodegenerative changes of pernicious anemia first manifested themselves.

In order to satisfy ourselves concerning the effect of the coordination exercises alone, in 1 patient we withheld the vitamin B_{12} therapy for ten days and used the exercises only. There was distinct evidence of improved coordination, even though we knew that there had been no arrest or reversal of the neurodegenerative changes. When vitamin B_{12} was finally added to the therapeutic regimen, the patient, as we expected, made even more rapid progress. Nevertheless, we had satisfied ourselves that the exercises of themselves contributed toward the improvement we noted in all cases.

The simple arrest or reversal of the neurodegenerative changes by the administration of vitamin B_{12} without the use of a well directed exercise program will not accomplish return toward normal coordination and function of the extremities as rapidly as when the exercises are added. This is particularly true in the cases of more advanced changes in which there is both incoordination and muscular weakness.

The exercises which we employ are carefully graduated. They start with the patient in the recumbent position, become gradually more complex and progress to exercises given in the sitting and finally in the erect position.

The exercises, given with the patient recumbent, start with slow rhythmic sliding movements of one leg and then both legs in flexion and extension. As the patient improves, these motions are started and stopped at command. Later the heel is lifted and, instead of sliding, the leg is balanced and moved in free space. Next, first one heel and then the other is placed in various positions on the opposite leg.

The coordination exercises gradually are made increasingly complex. Abduction and adduction are added. Exercises requiring maximal coordination with minimal muscular contraction are given. The patient is required to study the tactile impressions produced by certain movements. Movements of both limbs together are followed by alternate movements of the legs. Finally the patient attempts to follow someone's finger or cupped hand with his heel.

All exercises are prescribed specifically. Each one is repeated no more than four times every three hours. These patients tend to lose the sense of fatigue, and consequently it is important to prevent them from overexercising.

Later, patients are given exercises while in the sitting position and are taught how to sit down and how to get up from a chair. Unless corrected, such patients tend simply to let themselves fall into the chair. On rising, they may not be able to balance on the toes; therefore the body must be bent forward to throw the center of gravity over the heels.

Still later, walking exercises are begun, first sideways (because this is easier) and then forward, at first with a cane and later without one. The patient tends at first to walk too fast, and this tendency must be corrected.

If the patient has had considerable weakness of the muscles, we sometimes add resistive exercises utilizing sandbags or graduated weights, to increase muscular strength. These heavy resistance exercises are especially useful in producing muscular hypertrophy. We recall one patient, a farmer, who was given liver therapy and coordination exercises after prolonged disability and a long period of chair existence. He had vegetated for so long that he was extremely weak. It seemed advisable, therefore, to add strengthening exercises. After a program of both coordination and heavy resistance exercises in conjunction with the liver therapy, he now walks all over his farm, and his family's chief complaint is that he is too active.

Despite Murphy's advocacy of therapeutic exercise in conjunction with liver therapy, recently some physicians seem to have overlooked this valuable aid to prompt recovery following the administration of agents which produce adequate hemopoietic responses in combined degeneration of the spinal cord in pernicious anemia.

It seems evident that vitamin B_{12} produces optimal hemopoietic response and maximal arrest or reversal of neurodegenerative changes in pernicious anemia. When a suitable regimen of therapeutic exercises is added, disappearance of muscular incoordination and return toward normal muscular function are accelerated. Thus, maximal recovery in a minimal length of time is achieved.

Chronic and Unexplained Edema

A. G. W. Whitfield and W. Melville Arnott. In THE LANCET, No. 6571, p. 225, August 6, 1949.

We have little that is constructive to offer for the treatment of these cases. Elastic stockings and sleeping with the foot of the bed raised usually produces slight improvement. Massage seems to have so little effect that it is not worth the time and effort that it involves.

Emergency Treatment of Fractures

Peter B. Wright, M.D. In SOUTHERN MEDICAL JOURNAL, 42:8:687, August 1949.

Immobilization and rest are essential in the proper treatment of fractures. However, if continued too long, there will be excessive atrophy of muscles and unnecessary decalcification of bones. Joints which are immobilized too long will become stiff and develop disuse arthritis. When muscle atrophy and disuse arthritis are allowed to develop, they will prove to be more disabling than the original injury.

Early mobilization assures suppleness of the muscles and joints, improves the circulation and nutrition of the tissues and relieves muscle spasm.

Physical therapy has a very definite place in fracture treatment, and, if properly used, can be of great value. On the other hand, if used unwisely, it can do much harm.

Alterations in Peripheral Circulation and Tissue Temperature Following Local Application of Short Wave Diathermy

Herman J. Flax, M.D., Ruth N. Miller, M.D., and Steven M. Horvath, Ph.D., Philadelphia. In ARCHIVES OF PHYSICAL MEDICINE, 30:10:630, October 1949.

There is no doubt regarding the efficacy of the induction coil technic of short wave diathermy in raising the temperature of both the superficial and the deep tissues. There is, on the other hand, considerable discrepancy in the ability of such applications to increase the blood flow in the periphery. Although changes in the peripheral blood flow are not necessarily indicative of general circulatory changes occurring in the area where the temperature was raised, they suggest that the changes occurring in that heated area are not so great as one would be led to believe by other reports. It is imperative in all discussion of the effects of various heat-producing modalities, whether local or general, to differentiate clearly between those methods which raise the body temperature per se and those which raise the temperature of a part only. It is conceivable that heat can be so applied locally that it would result in a semiconstriction of the blood vessels leading to and from that area, consequently inducing a marked elevation of temperature within that part.

It would appear from the results presented that the changes in blood flow are not necessarily a consequence of the changes in the deep tissue temperature.

SUMMARY

Alterations in peripheral circulation of the lower extremities and tissue temperatures following local application of short wave diathermy were studied. No correlation between the temperature rise of the superficial area and that of the deep tissues was obtained, but a significant correlation was obtained between the temperature elevation at a depth of 1 inch and a depth of 1½ inches. Four types of general response in peripheral blood flow, correlating well with surface temperatures, were observed; no vasodilation in the distal area; gradual vasoconstriction; marked vasodilation, and no change in blood flow during the application with an increase occurring later.

Effects of Cortisone Acetate on Rheumatoid Arthritis

Edward W. Boland, M.D., and Nathan E. Headley, M.D., Los Angeles. In JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, 141:5:301, October 1, 1949.

The adrenal cortical hormone, cortisone acetate (compound E acetate: 17-hydroxy-11-dehydrocortico-sterone acetate) was adminstered for short or relatively short periods to 8 patients with rheumatoid arthritis. Definite, but temporary, improvement in the clinical and certain laboratory features of the disease resulted in each case.

Five of the eight patients had severe rheumatoid arthritis and were given large doses of cortisone acetate for short periods (total of 1 Gm. in divided doses for eight days). The immediate results were decidedly pronounced improvement in 3, pronounced improvement in 1 and moderate improvement in 1. Prompt or fairly prompt relapse of the disease, with return of clinical manifestations approximately to their original severities, occurred after withdrawal of the endocrine preparation in 4 of the 5 cases. The fifth patient retained, 2 months after discontinuance of the use of cortisone, approximately 75 per cent of the initial improvement.

Three additional patients with less severe rheumatoid arthritis (2 with moderate and 1 with mild disease) were given smaller doses of the drug for longer periods. With daily doses of 50 mg. the symptoms and objective observations were adequately, but not completely, controlled. Doses of 50 mg. of cortisone acetate given every other day were not as effective in controlling the clinical manifestations.

Because of the small number of cases reported and the brief periods of administration of cortisone, definite conclusions cannot be drawn. However, the results in 8 cases indicate that this adrenal cortical preparation, when given in large or relatively large doses, will rapidly suppress the clinical manifestations of rheumatoid arthritis. The results reported herein confirm the observations made originally and described recently by Hench, Kendall, Slocumb and Polley.

The Oscillographic Recording and Quantitative Definition of Functional Disabilities of Human Locomotion

R. Plato Schwartz, M.D., and Arthur L. Heath, B.S., Rochester, N. Y. In ARCHIVES OF PHYSICAL MEDICINE, 30:9:568, September 1949.

A quantitative definition of normal human locomotion based on measurements of oscillographic recordings has been presented. Curves derived from a summation of forces were used to define the function of the foot as a unit.

Additional comparisons of average pressure and pound-seconds of work done at six levels of individual feet provides specific information regarding the function of various parts of the foot.

Comparisons of clinical records with normal standards provide a quantitative definition of malfunction.

Successive records made during the course of conservative treatment and preoperative and postoperative series of records provide quantitative evidence of the effectiveness of therapy.

Similar disabilities resulting from different causes produce records revealing readily identifiable departures from the normal record pattern.

A better understanding of the function and functional requirements of the normal foot can be most confidently provided through the application of quantitative measurement to the study of function of the foot.

It is now possible to define quantitatively the functional efficiency which is restored by therapeutic procedures as applied for the correction of a given disability.

The General Management of Rheumatoid Arthritis

Charles Ragan, M.D. In JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, 141:2:124, September 10, 1949.

The most important measure is rest. By rest is meant rest for the body as a whole—in bed, if necessary—and rest for the inflamed joints, either by bed rest or by splinting in plaster. Rest must always be supervised; when unsupervised, bed rest is worse than no rest at all. The ideal is rest coupled with exercise. Exercise should always be within pain and fatigue limits. It should be directed toward strengthening muscles which if lost will result in flexion contractures, which are to be avoided if at all possible. Rest should be graduated, depending on the activity of the disease. It may vary between complete rest in bed for the patient with the severe, active stage of the disease to brief periods on a couch before dinner for the patient with a mild form of the disease. Some believe that ideally the patient with rheumatoid arthritis should be treated as is the tuberculous patient with prolonged care in a sanatorium. However, there are certain obvious defects in this argument.

First, there are practically no facilities for hospitalization of the patient with rheumatoid arthritis in the United States; economically, it is not feasible for the average wage earner or housewife to have this. Second, there is some doubt in the minds of patients with rheumatoid arthritis that prolonged bed rest benefits them. Some feel that stiffness is intensified by it.

Flexion contractures should be prevented if possible by the use of molded plaster splints. These can be worn with practice and encouragement by the average patient but should be removed at regular intervals for supervised exercise. Since we have followed patients who have continued to have an active form of the disease for over twenty years, this continued supervision may be difficult. However, in the acute episode such simple plaster splints can be exceedingly helpful.

Muscle-setting exercises within pain and fatigue limits should be encouraged strongly. Active exercise for the patient able to perform it and passive exercises when active exercises cannot be carried out are the mainstays of the physical treatment for these patients. Again, the aim is to prevent flexion contractures by rebuilding extensor muscle groups and thereby overcoming the stronger flexor groups.

The place of psychotherapy has not as yet been fully evaluated. In the prodromal period these patients may often experience emotional shocks. Intensive psychotherapy is a tedious process. Often when the psychiatrists have been asked for help, lack of insight or an immature attitude on the part of the patient has prevented help from such therapy. Patients with severe long-standing rheumatoid arthritis are chronically ill, with all that term implies of a warped and dismal outlook on life in general. Whether this is the result of the disease or the cause of the disease one cannot say.

Rehabilitation for living is an extremely important phase of the treatment of the patient with rheumatoid arthritis. This includes an emotional acceptance of deformities, with physical correction of such as it is possible to alter. It also includes economic rehabilitation whereby a crippled person may be taught a trade by which he may become free, at least in part, of the charity of relatives or of the state. This is possible with a great number of patients, but a willingness to withstand pain to gain a degree of activity is essential, and some patients never achieve this goal.

The aim of the physician in the treatment of the patient with rheumatoid arthritis should be to allay pain and to prevent flexion contractures or deformities as far as is possible. Although pain may not be completely relieved, if the patient can be encouraged to keep an optimistic attitude—and the end result described here is not too discouraging—his prognosis should be favorable. Once deformities have ensued, a program of reeducation for economic and social self-sufficiency is extremely important.

Book Reviews

Essentials of Orthopedics. *By Philip Wiles, M.S., F.R.C.S., F.A.C.S., Consulting Orthopedic Surgeon, Royal Surrey County Hospital, Surrey, England. Cloth. Price, $10. Pp. 486, with 372 illustrations. The Blakiston Company, Division of Doubleday & Company, Inc., 1012 Walnut St., Philadelphia 5; J. & A. Churchill, Ltd., 104 Gloucester Place, Portman Sq., London, W.1, 1949.*

The author has written the book primarily for the use of the general practitioner. Considerable emphasis is placed upon function in the human body. His chapter on postural defects discusses the physiology of bones and joints and their relationship to muscles and ligaments with emphasis placed on postural reflexes. Normal posture and curves of the spine are described and four main types of defects listed. In the treatment of these defects, three important factors are listed: first, restoring mobility sufficient to allow correction of the defect; second, acquiring sufficient muscle strength for voluntary muscle control over movements of the parts affected, and third, establishing new postural reflexes. Various congenital anomalies, nerve root tumors, intervertebral disc lesions and changes due to trauma are discussed in reference to chronic back pain.

Infections, arthritis, bone tumors, diseases of the nervous system and generalized congenital abnormalities and bone diseases are discussed in separate chapters. A separate chapter also is devoted to each region in the body. The various orthopedic conditions affecting each area are discussed in their respective chapters.

In the discussion of idiopathic scoliosis, the etiology is said to be due to muscular imbalance in the short rotators of the spine. The mechanics and clinical features of the condition are described. Treatment is directed along one of three plans: exercises to restore mobility, muscle power and the best possible posture; relief of pressure by mechanical aids, or spinal fusion.

In general, the book is well arranged for the information of the general practitioner; but it is primarily a medical book and the portions dealing with physical therapy are insufficiently elaborated to be of any great value to the physical therapist.

Stedman's Medical Dictionary. *Edited by Norman Burke Taylor, M.D., R.F.S.C., F.R.C.S. (Edin.), F.R.C.P. (Can.), M.R.C.S. (Lond.), University of Western Ontario and formerly of the University of Toronto. In collaboration with Allen Ellsworth Taylor, D.S.O., M.D. Seventeenth edition, revised. Cloth. Price, with thumb index, $8.50; without thumb index, $8. Pp. 1361, with illustrations and 22 plates. The Williams and Wilkins Company, Mt. Royal and Guilford Aves., Baltimore 2, Md., 1949.*

Stedman's dictionary has held an important place in the field of medicine for many years because it has been kept up-to-date by frequent revisions. This edition has been thoroughly revised, obsolete words have been deleted, old definitions have been revised and new words added. No trade names have been added and most of those in the last edition have been taken out. Short biographical sketches of the principal figures in the history of medicine are a new feature.

The special features which have been in previous editions are retained, such as a section on etymology, tables of weights and measures, technics of clinical laboratory tests, comparative temperature scales, and lists of terms sanctioned by the Basle Anatomic Convention. Several plates are in color.

Every physical therapist should own a medical dictionary, and Stedman's new edition will be a valuable reference for the answers to many questions.

Massage and Remedial Exercises in Medical and Surgical Conditions. *By Noel M. Tidy, Member of the Chartered Society of Physiotherapy, T.M.M.G. Eighth edition. Cloth. Price, $5.25. Pp. 487, with 190 illustrations. The Williams and Wilkins Company, Mt. Royal and Guilford Aves., Baltimore 2, Md., 1949.*

That this is the eighth edition since 1932 is indicative of the popularity of this book. Its purpose is to serve as a textbook for senior students, for those recently qualified or for junior teachers in training for the Chartered Society's examination.

Some alterations have been made in this edition. Additions have been made to the chapter on respiratory diseases; the treatment by physical methods of sciatica due to prolapsed intervertebral disk is added and details of prenatal exercises also are given.

The section on anterior poliomyelitis has been revised but the treatment suggested differs from that used most widely throughout this country. Massage is recommended in the acute stage (as soon as pain subsides) and in the convalescent stage. Electrical muscle stimulation is suggested for adults but is considered unsuitable for children. Diathermy is recommended as a form of heat but no mention is made of moist heat. The lists of exercises suggested for treatment follow in general the Swedish Remedial type. No special massage manipulations are described. The content of the book as presented gives in detail the massage and exercises to be used in treatment of nearly every medical and surgical condition from "chronic gastritis" to fractures. The etiology, pathological changes, symptoms and general treatment of each condition and in some instances the anatomy and physiology of an area are given and the physical treatment follows in detail.

To this reviewer this book does not seem to be suitable for a text for physical therapy students as the courses in physical therapy are taught in most schools in this country. The information on the basic sciences is too brief to suffice for these subjects and it seems useless to repeat these in connection with the physical therapy which is indicated. This book might be useful as a reference book for a physical therapist who wishes to refer quickly to the specific treatment by massage and exercise in any certain condition.

The Story of Medicine. *By Joseph Garland, M.D. Cloth. Price, $2.75. Pp. 259, with 23 illustrations by Edwin H. Austin. Houghton Mifflin Company, 2 Park Street, Boston 7, 1949.*

The author, Dr. Joseph Garland, editor of the New England Journal of Medicine, has written an absorbing tale about the account of the men and women who have devoted themselves to the health and healing of mankind. Most authors of medical history give the history of the use of herbs in medicine. Doctor Garland says many of the medical writers during the Dark Ages were given to the production of herbals, describing the various plants from which the drugs of the period were derived. The current belief concerning the dangers attendant on the gathering of the mandrake root, used in the anesthetic sponge of Hugh and Theodoric of Lucca, is featured in many of these. This plant, often double rooted, giving a fancied resemblance to the human body, was supposed to be so sensitive that it shrieked in agony when pulled from the ground. Whoever heard this shriek dropped dead or lost his reason. Gatherers of the root accordingly only loosened it in the ground, and then tied a dog to it and allowed the dog to pull it out. In the words of a familiar poem by Oliver Goldsmith "it was the dog that died." In Romeo and Juliet, Shakespeare mentions this quality of the mandrake root: "And shrieks like mandrakes torn out of the earth, that living mortals, hearing them, run mad."

In the eighteenth century, Doctor Garland states, the center of medical learning moved to the north and the study of anatomy and surgery reached their height with William and John Hunter of Scotland. A typical day in the life of John Hunter has been described as follows: "From six in the morning, or even earlier, until nine, he was in the dissecting room; after breakfast he saw patients at his house, before going his round of visits. He dined at four, after which he slept for about an hour; and, when not lecturing, he dictated . . . till one or two in the morning, leaving only four hours for sleep."

Doctor Garland interestingly covers the story of medicine from the Demonic theory, that in which sickness was considered to be a form of punishment, to the broad horizons in medicine today which are built on the foundations covering centuries of service.

This book will be of interest to all those in any way associated with the medical profession.

Lectures from the Physicians' Course in the Treatment of Poliomyelitis, Stanford University, June 14, 15, and 16, 1947, June 7, 8, and 9, 1948. *Given by The Medical School and The Division of Physical Therapy, Stanford University, with assistance from The National Foundation for Infantile Paralysis.*

The reputation of the lecturers insures the value of the information presented in this booklet.

In the discussion of the physiology of poliomyelitis, Victor E. Hall presents the motor unit as the basis for all study in reference to the disease. The influence of central impulses and peripheral stimulation on the motor unit are described. Reversible and irreversible changes in the cells are discussed and a comprehensive study of "spasm" is presented.

The epidemiology and pathogenesis of poliomyelitis is discussed by Harold K. Faber. He stresses the importance of droplet infection and transmisson to the central nervous system by way of nerve pathways. The diagnosis and differential diagnosis is covered in detail.

Miland K. Knapp outlines his studies on bulbar poliomyelitis and classifies the cases including encephalitis. The treatment is well outlined.

Jessie Wright discusses the care of the respirator patient and physical therapy, emphasizing the common sense principles about which she has written previously.

Kenneth S. Landauer discusses the program of the National Foundation for Infantile Paralysis in reference to research, education and medical care assistance.

Institutional Care Facilities in the United States for Rheumatic Fever and Rheumatic Heart Disease (Children and Adults). *American Council on Rheumatic Fever of the American Heart Association, Inc., in collaboration with the Helen Hay Whitney Foundation. Paper. Pp. 44. The American Heart Association, 1775 Broadway, New York 19, 1949.*

This is a factual directory which gives detailed information on the facilities which care especially for rheumatic fever and rheumatic heart disease. Information is given regarding the availability of occupational therapy in all of the listed facilities; in only one instance is the availability of physical therapy mentioned.

Meet Our New Contributors

Buchanan, Josephine Jordan, M.D., Woodrow Wilson Rehabilitation Center, Fishersville, Va. Doctor Buchanan received her certificate of physical therapy from Richmond Professional Institute in 1936, and her M.D. degree from the New York University College of Medicine in 1944. She served as Director of Clinical Services, Baruch Center of Physical Medicine, Medical College of Virginia, 1945-48, and as Consultant, Federal Office of Vocational Rehabilitation, 1949. At present she is Director of Medical Services, Woodrow Wilson Rehabilitation Center, Fishersville, Va., and Assistant Professor of Clinical Physical Medicine, Medical College of Virginia, Richmond. Member: American Medical Association, American Congress of Physical Medicine, American Physical Therapy Association, National Rehabilitation Association.

Buchwald, Edith, 123 West 74th St., New York, N. Y. Miss Buchwald attended New York University, and received her certificate of physical therapy, her B.S. and M.S. degrees from this institution. She served as a physical therapist at the Institute for Crippled and Disabled in New York City, and organized the rehabilitation program for the Paraplegic Section at Framingham General Hospital, Cushing, Mass., in 1945, and at McGuire General Hospital, Richmond, Va., in 1946. At present she is Director of Rehabilitation Courses for Physical Therapists, New York University-Bellevue Medical Center, Institute of Rehabilitation and Physical Medicine, 325 East 38th St. Member: American Physical Therapy Association, American Registry of Physical Therapy Technicians.

Deaver, George G., M.D., 70 East 96th Street, New York, N. Y. Doctor Deaver received his B.P.E. degree from Springfield College in 1912, and his M.D. degree from the University of Pennsylvania in 1917. He has served at the Willard Parker Hospital; as consultant for St. Charles, Long Island, Hackensack Hospital, N. J., Veterans Administration, Army, and National Society for Crippled Children and Adults. At present he is Professor of Clinical Rehabilitation and Physical Medicine, New York University College of Medicine, and Physician in Charge of Physical Medicine at Bellevue and Lenox Hill Hospitals, New York, N. Y. Member: American Medical Association; American Academy of Cerebral Palsy (President); Committee for Multiple Sclerosis; Advisory Board, Greater New York Chapter for Infantile Paralysis, Etc.

Furscott, Hazel E., Box 667, Tiburon, Calif. Miss Furscott attended the University of Chicago and Wellesley College, receiving her Ph.B. degree and certificate in physical education from Wellesley in 1917. She also has had many short courses in physical therapy. She served as a U. S. Army Reconstruction Aide in Physical Therapy from 1918 to 1920; as Head, Department of Physical Therapy, University of California Hospitals, 1920-24; in private practice, 1924-46, and in her present position as Administrator of the Rehabilitation Center of San Francisco, Inc., 1680 Mission St., San Francisco, California, since 1947. Member: American Physical Therapy Association; Advisory Council, Bureau of Vocational Rehabilitation, State of California; Executive Committee, California Council of Agencies for the Handicapped; Executive Committee, Regional Chapter of National Rehabilitation Association; Associate member, American Occupational Therapy Association; president of the APTA, 1929-30, etc.

Kuhnen, Joan Carroll, 444 East 20th St., New York, N. Y. Miss Kuhnen spent two years in premedical work at Bucknell University, and then received her physical therapy training at New York University, from which she graduated in 1946 with a B.S. degree. She served as a physical therapist for two years at the Neurological Institute Medical Center, Department of Motor Disability, New York City, and since that time has been Coordinator, Lenox Hill Cerebral Palsy Center, Lenox Hill Hospital, New York City. Member: American Physical Therapy Association, American Registry of Physical Therapy Technicians.

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POSITIONS AVAILABLE

WANTED—PHYSICAL THERAPIST—graduate of an approved school, for coordinator and physical therapist of a day school for cerebral palsied children. For further information write: Miss Jeanne Adams, Secretary, Kanawha County Society for Crippled Children, Charleston, West Virginia.

NEEDED by large middlewestern university qualified registered physical therapist for full-time work. Address replies to Box 375, The Physical Therapy Review, 1790 Broadway, New York 19, N. Y.

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WANTED—PHYSICAL THERAPIST—Able to take charge of department, 170 bed hospital near Detroit. Maintenance available in Nurses' Home. Wyandotte General Hospital, Wyandotte, Michigan.

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